FARMERS DIGEST

Volume 25 Number 1

50¢

Contents for May 1961

How To Manage Grass Pasture	Cyanagrams	1
"Americans Should Take Pasture Lessons"*	Michigan State University	6
The Pros and Cons of Parlor and Cowshed	Farmer & Stock Breeder	7
You Still Need Fertilizer and Lime*	Louisiana State University	8
Don't Let 'Em Out To Pasture Too Soon!	Wisconsin Agriculturist	9
Hog Raising in North Ireland	Deutsche Landwirtschaftliche Presse	11
Selecting Meat Type Steers	Polled Hereford World	15
Are You Getting Your 20% Crop Bonus?	Tractor Farming	19
Fantastic Pest Control Methods	Successful Farming	21
Figure Your Cost Before Buying Machinery	The Nat'l Future Farmer	24
Farm Work Timetable	Ohio Farm and Home Research	27
New Research Results On Starter Fertilizer Placement*	Iowa State	29
Rules for Insecticide Safety	Pennsylvania Farmer	30
Beating "Summer Sterility" In Sheep	Research and Farming	31
Ten Goals For The Successful Dairyman*	Cornell University Study	32
Fun On The Farm	Collected	33
Watch Out For "Photosensitization"	Iowa Farm Bureau Spokesman	37
Farm Woodlots for Timber and Wildlife	Wis. Conservation Bulletin	39
Chimney Smoke	Irene Rudie	43
How Feeds Supply Hog Needs	Wallaces Farmer	44
Red Clover — The Old Reliable	Soil Conservation	47
Castrating Lambs Pays*	Virginia Polytechnic Institute	50
Should You Pasture Young Dairy Calves?	Guernsey Breeders' Journal	51
The Old-Time Western Ring Toter	The Cattleman	55
Can You "Burn Out" A Dairy Cow?*	New Mexico State University	56
How Good Is Your Silage?	Tennessee Farmer	57
How To Tell If A New Idea Will Pay	Farm Journal	60
Don't Wait Too Long To Put Up Hay	The Ohio Farmer	63
Let's Raise Those Pigs	American Hampshire Herdsman	66
New Portable Housing For Sows and Gilts*	Litter-Ature	68
My Life With Jack, A Story	Peter Lewington	69
Cut Dairy Feed Costs 25%	The Furrow	73
Are Pastures Out of Date?	The Progressive Farmer	75
Do You Believe In Moonlore?*	Gerald S. Lestz	77
The Cow: A Calf Factory	American Hereford Journal	78
The Miracle Substance In Your Soil	Crops and Soils	83
Dairying Demands Greater Skills	Prairie Farmer	87
Be Kind To Cows, and They'll Repay*	West Virginia University	92

*Short Features In This Issue. One Year Continuing Index, **pages 93 & 94**

Price Prospects For 1961 Crop Corn

What about market prices for 1961 crop corn. The answer seems to depend largely on the extent to which farmers participate in the new feed-grain program.

If participation in the feed-grain program is low, say 25 percent in seven leading states, nonparticipating farms would provide around 3,200 million bushels of corn. This would be only about 300 million bushels less than probable domestic and export needs. Sales from CCC stocks and from "overrun" production on participating farms could easily make up the difference. Market prices might then remain well below the support level, perhaps below $1.00.

If farmer participation is high, say 50 percent. nonparticipating farmers would produce only about 2,500 million bushels of corn or about 1,000 million bushels less than the quantity needed for feed, industry and export. This amount would reduce CCC stocks and come from farms that participate in the program.

If half of farmers participate, they will take out price support loans until the market price rises close to the support level. The market price will tend to stabilize at that level. This may be around 10 cents below the support level.

—Based on Illinois Letter

THE FARMER'S DIGEST
Route 2 FORT ATKINSON, WIS.
Editor and Publisher — Hugh Highsmith
Associate Editor — D. W. Scheid
Livestock Editor — Al Haller
Circulation Manager — Jay P. Van Valin
Subscription Service — E. M. Hartwig, V. M. Binkert
Industry Sales — Raymond C. Groendyke
Subscriptions in U. S., U. S. Possessions and Canada: One year $3.00, two years $5.50, three years $7.75.
Published monthly, except June-July and August-September, when published bi-monthly at Fort Atkinson, Wisconsin by The Highsmith Co. Inc.
Subscriptions to Other Countries: One year $3.50, two years $6.50, three years $9.25.
ADVISORY EDITORIAL STAFF
William A. Albrecht, Chairman
Department of Soils, U. of Mo.
G. B. Gunlogson, Agricultural Engineer
T. J. Rutherford, Chairman, Canadian Farm Credit Corporation
W. T. Spanton, Chief of United States Ag. Education Service.
POSTMASTER: Send notice on POD Form 3579 to Farmer's Digest, Route 2, Fort Atkinson, Wis. Entered as second-class matter at the Post Office at Ambler, Pa., July 30, 1948, entry at Jefferson, Wis. under the act of March 3, 1879. Printed at Jefferson, Wis. re-entered at Fort Atkinson, Wis., additional

IMPORTANT!

Farmer's Digest Summer Publishing Dates

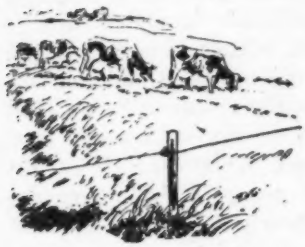
During the summer months, Farmer's Digest is mailed to you every 45 to 50 days instead of monthly. This practice, started years ago, keeps our subscription rates down by giving you fewer copies when you have less time to read. You will receive our June-July issue on or about June 20; our August-September issue on or about August 15. Following issues will again arrive near the first of the publication month.

The Publisher

The Farmer's Digest

Volume 25 May, 1961 Number 1

How To Manage Grass Pasture



"Pasture is a cash crop any way you look at it." Here's how to get more cash . . .

Condensed from Cyanagrams

H. H. Nau

PASTURES are the most neglected fields in agriculture today. Many pastures do not deserve the name—they are no more than exercising lots with fences around them.

Yet pasture is the backbone of any livestock enterprise. Good farmers know that nutrients for cattle can be produced more economically from pasture than any other source.

Cornell research has shown that a dairy cow can obtain enough nutrients from top quality pasture to maintain herself and produce up to 40 pounds of milk per day without additional feed. Beef cattle will gain up to 2.5 pounds per day on pasture alone. Many dairymen believe that an additional undetermined stimulating effect on milk production is obtained when cows are on pasture.

Pasture is, therefore, the *foundation* of any successful forage program. Legume and grass mixtures should be used if soil conditions favor long lasting stands of legumes. However, legumes are difficult to maintain in many pastures and contribute less to the support of production than is frequently imagined. Under these conditions emphasis should be placed on getting the most out of grass.

Grass has been called "the forgiveness of nature" because it will

Reprinted by permission from
Cyanograms, American Cyanamid Co., 30 Rockefeller Plaza, New York 20, New York

grow well even where man has neglected it. Because it does grow with little care, man has not only neglected grass, but has downgraded it to the status of a weed in many cases. Yet grass responds well to fertilization and good management and has many built-in advantages:

1. Some grasses grow well on almost any soil.
2. No bloat problem.
3. Fewer insect and disease problems.
4. Easier weed control.
5. Longer lived stands.
6. More weather tolerant.
7. Costs less to establish.

When legumes run out in pasture it may be much wiser to *refertilize* the grass than to *renovate* for legumes, unless pasture is in rotation with other crops. Research in Pennsylvania has shown that rough pastureland may cost as much as $159 an acre to renovate. Production can usually be doubled on such land, if good grass species remain, with $15-$45 worth of fertilizer.

Value of Fertilizer on Grass Pasture

The value of fertilizer on grass has been well established by research in many states, but is still not adequately appreciated by farmers.

Nitrogen, plus phosphate and potash, will not only produce a lush, early growth of grass, but will extend the pasture season.

Another experiment in Pennsylvania has shown that even bluegrass pasture will really produce when properly fertilized. Unfertilized bluegrass pasture returned a profit of only $43.89 through grazing dairy cows, whereas the addition of nitrogen and minerals increased this to $222.41. Massachusetts figures show the same trend on native pastures: unfertilized, 2,100 pounds of dry matter per acre, fertilized, 6,600 pounds of dry matter per acre. Minnesota figures show an increase of $44.52 worth of beef per acre from the expenditure of $15.00 an acre for fertilizer.

Application of Minerals on Pasture

The need for lime, phosphate, and potash should be determined by soil test. There are a number of ways in which the farmer can correct deficiencies; however, most agronomists will agree that the best practice is to apply the mineral elements in the fall and the nitrogen just before it is needed by the growing plant. Loss from leaching of phosphorus and potash on grassland soils is not us-

Legally, the husband is the head of the house and the pedestrian has the right of way. Both husband and pedestrian are fairly safe unless they try to exercise their rights.

ually a problem because snow and rain tend to distribute these elements more uniformly during the winter, putting them in contact with more roots for better use in the spring and summer. Pasture fertilized with these elements in the fall consistently shows greater density and vigor. Fertilizers such as 1-2-2, 1-2-3, 0-1-1 or 0-1-2 ratio (as the soil test dictates) are usually recommended to correct phosphorus and potash deficiencies. A three-ton hay yield removes approximately 30 pounds of P-2, O-5 and 120 pounds of K-2, A; therefore, requirements will be correspondingly higher as greater yields are produced with additional nitrogen.

Depending on soil type, crop history and past fertilization, some fields may need little or no phosphate, but a generous amount of potash. If so, a fertilizer of 0-1-3 or 0-1-4 ratio may be the answer. In certain cases the reverse may be true so that only phosphate need be applied, or a high rate of phosphate and lower rate of potash.

Work is the easiest means man has invented to escape boredom.

Nitrogen

An adequate supply of nitrogen is usually the most important factor involved in producing high yields. Nitrogen produces rapid growth, gives dark green color and increases the quality of grass, particularly the protein content. Satisfactory yields of high quality forage crops require 100 or more pounds of actual nitrogen per year. In well inoculated legume stands much of this required nitrogen is supplied by the nitrogen fixing bacteria. Where grass is predominant, or legumes have begun to fade, it must be supplied by the farmer. Nitrogen must be applied frequently to maintain uniform production. An application of 50 to 75 pounds of actual nitrogen should be made in late fall or very early spring to stimulate quick growth. Early applied nitrogen can produce grazing 10 to 15 days earlier than unfertilized pasture. At least one additional application should be made in early summer. Another application should be made in early fall to stimulate fall growth for grazing and development of food reserves in the roots.

Grazing Management

Life of stand and production per acre is affected greatly by the care with which the area is grazed. Overgrazing, or grazing too close, too early or too late, are all detrimental because of the effect on food reserves and destruction of growing points. Bluegrass can be grazed when 4 to 6 inches

high. Taller growing grasses such as timothy and brome can be grazed when 6 to 8 inches tall. No pasture should be grazed closer than 2 inches from the ground. Cattle should be taken off when second growth leaves the crown of the plant. Forage that is not utilized by cattle should be taken off by clipping to facilitate regrowth. Four types of grazing are generally practiced in the United States: continuous, rotational, strip and zero.

Continuous Grazing

This is the simplest method of harvesting forage and has been used since the dawn of history. Animals harvest and transport their own feed. Losses are high, however, from trampling and fouling and efficiency is low. Overgrazing and loss of stand frequently take place during poor producing weather.

Rotational Grazing

Grazing can be controlled if pasture acreage is divided into 4 to 6 plots of equal size. Total acreage per plot will depend on the size of the herd and the productivity of the pasture. The entire herd is allowed to graze until plant height is down to 2 to 4 inches. The animals are then moved to the next paddock. The first plot should be clipped and an application of nitrogen or complete fertilizer applied. Excess production on plots not needed for pasture can be cut for hay or silage.

A variety of species makes rotation grazing more practical. By seeding some paddocks to early species and others to late species or varieties, a continuous maturity sequence can be established. Experiments in Ohio show that about 1/3 more feed per acre can be obtained from rotated pasture than a continuous system.

Provide one acre for each cow in the herd and divide into eight paddocks with cross fencing.

Strip Grazing

Strip grazing is a form of rotational grazing differing in that cows are confined to that area which can be consumed in 12 to 24 hours. This practice requires more labor and better management, but reduces trampling and fouling.

One of our pals, after a tiff with his wife, remarked that if women ever get equal rights it will be quite a comedown for them.

Zero Grazing

Zero pasture, or soiling, consists of cutting the forage by machine and feeding it green to animals in stanchions or feed lots. This system provides rotational management of pasture and hay land through machines without fencing. There is little waste, no

trampling, fouling or selective grazing. Animals do not waste energy hunting for food. Production per acre is higher, but more labor and capital is required. This method seems to be best adapted to larger herds and where tall-growing, high-producing species are used. A constant supply of good quality forage must be maintained which means that management through specie selection and fertilization becomes very important.

Summer Pasture

Midsummer months are usually hot and dry. Cool season grasses and legumes produce very little grazing at this time, especially if fertilization is neglected. Several steps can be taken to improve summer pasture. Fertilization of pasture with nitrogen after first grazing or cutting will promote quicker recovery and greater root growth to survive hot, dry weather. Winter hardy, summer producing perennial grasses such as Midland Bermuda can be grown successfully in the Middle Atlantic States. Coastal Bermuda can be grown in the Southern States.

Seeding of summer annuals such as pearl millet or Sudan grass is an effective way to guard against summer pasture slumps. These crops are high producers and offer great flexibility. They can be grazed, green chopped, cut for hay or put into the silo. Sudan grass or sorghums should not be grazed when less than 18" tall or after they have been frosted.

Fall Pasture

The fall grazing season can be extended on many farms by the use of fertilizer, especially nitrogen, on permanent pastures in early fall. Weather conditions in the fall are similar to spring, but

Misery loves company — but can't bear competition.

many pastures fail to produce because they have "run out of gas". Fall fertilization of pasture will also increase food reserves in the plant and roots, improving resistance to winter kill and promoting early spring growth.

An early planting of rye or other small grain will provide much grazing in the fall and early spring, if well fertilized. The seeding should be heavy enough to form a good turf. Fertilizer should be disked-in rather than plowed-in to provide a firmer soil in wet weather.

Weed Control

Control of weeds in pasture is a necessity. Many of the off-flavors which result in rejected milk can be traced to weed contamination. The bulk tank has made this problem more acute than ever.

Clipping keeps down weeds,

maintains palatability by removing coarse growth and improves yields. Fertilizer is probably the best chemical for weed control. Adequate fertilization will produce tall, dense stands which smother out undesirable weeds and grasses. Wild garlic and perennial broadleaf weeds can be taken out of grass pastures by spraying with 1 quart 2,4-D ester per acre in early spring.

Cash Crop

Pasture is a cash crop any way you look at it! It is a cash crop which will respond to fertilization and management to even a greater degree than will many row crops. Even where farmers have difficulty maintaining legumes they can have profitable pastures by substituting nitrogen from a bag for that which cannot be supplied by nature. Grass, "the forgiveness of nature," will not forgive neglect so much as it will repay good fertilization and management.

American Farmers Should Take Pasture Lessons

U. S. farmers can borrow some good tips from the English to increase production.

"The English farmer is way ahead of his American brother in the use of forage," said C. R. Hoglund. The Michigan economist recently returned from a year in the British Isles as a NATO research fellow at the Grassland Research Institute. In the U. S., crops like corn, beans and wheat get first attention on most farms, Hoglund said.

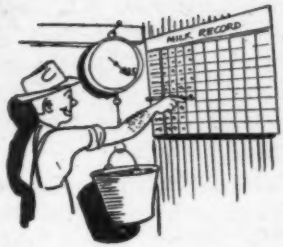
It's not so with the Englishmen. He fertilizes his grass with 100, even 200 pounds of nitrogen a year. While average, legume-grass mixtures need no nitrogen, these forage crops give dramatic responses to phosphorus and potash.

"American ingenuity and technology," Hoglund said, "are generally outstripping the English in the use of forage machinery. In fact, many forage handling systems have been copied from Americans.

"Even though many of our farmers know they can get 20 to 30 per cent more feed from strip grazing, the average farmer here is not the 'grass man' his English brother is. He devotes more attention to his grain crops.

"The extra time spent in rotational grazing might well increase yields by 20 per cent. Over 40 acres of alfalfa, this extra production could well release 8 acres of land for planting to other high-income feed crops." —*Michigan State University*

The Pros and Cons of Parlor and Cowshed



This British magazine article summarizes the results of recent research . . .

Condensed from Farmer & Stock Breeder

Nigel Harvey

IN 1905 Professor Fraser, of the University of Illinois, made the first attempt to make a general comparison of what we now call the yard-and-parlor system with the cow-house system.

Fraser was a pioneer. He has had followers. Since his time comparisons of the two systems have produced a library of nearly a hundred publications of which about half have appeared in the past ten years.

A number of the recent published trials have compared the food consumption and the milk production of herds housed in yards with those of herds housed in cow-sheds. The results show very little difference between the two systems, though some European evidence suggests that the feed efficiency of the cowhouse or barn cow is slightly higher.

Neither is there any significant difference in the cleanliness of the milk. Two scientists have obtained bacteria counts for 77 pairs of yarded and cow-housed herds and have found that the figures are very much the same. But the yarded cattle win on butterfat content.

There is, of course, no "standard" amount of straw and no "standard" type of building.

The amount of straw required in a yard is influenced by the amount of cattle movement; the more movement, the more straw is needed. In some Wisconsin experiments the cows were at first fed in the strawed area where they also lay and slept. Later a separate feeding area, which was not strawed, was added. This change reduced the amount of straw needed per cow from 34 to 13 lbs. per day.

There is no "dirtometer" to measure the comparative cleanliness of cows housed in cowshed or barn. But investigators agree that the yarded cows are cleaner.

Reprinted by permission from
Farmer & Stock Breeder, Dorset House, Stamford Street, London, S. E. 1

Away back in 1950, sixteen out of Professor Fraser's eighteen farmer victims listed "labor saving" as the chief advantage of the yard-and-parlor system.

Less Labor

All the investigators since have repeated the verdict, and have shown that the yard-and-parlor system needs about 20 per cent less labor per cow than the cowhouse. But a great deal depends on individual layout and individual management. In extreme cases a bad routine may outweigh the potential advantages of the yard system used. One investigator, in Canada, found that a sample of yard-and-parlor farmers took longer per cow than their cowhouse neighbors, for they had not evolved a satisfactory routine.

A number of investigators say that individual attention, including the early detection of sickness or injury, is more difficult in yards than in a cowhouse. On the other hand, injuries of the mechanical type are less common among yarded cattle.

The most detailed figures on this point come from a Wisconsin University project, which summarized injuries among its three herds of dehorned Friesians from 1946 to 1950 as follows:—

	Cow-house	Yard-and-Parlor No. 1	Yard-and-Parlor No. 2
Foot troub'e and lameness	31	6	8
Injured knees and hocks ..	11	1	0
Haematoma from bruises	4	1	1
Stepped-on teats	12	0	0

There is also evidence that yarded cattle suffer less from mastitis, and that their general health is better.

Fertilizer And Lime Still Needed

Commenting on the outlook for fertilizers and lime, W. J. Peevy, Agronomists with Louisiana State University says the total use of fertilizers by farmers is still far less than the minimum recommended. However, many of the better farmers are doing a good job of fertilizing row crops and small grain. Very few farmers do a good job of fertilizing pastures, he believes.

"The use of lime is very low, compared to that needed," Peevy asserts. "The need for use of lime is becoming more critical as farmers try to produce larger yields with larger amounts of fertilizer. The failure to use lime will create production problems that will be very expensive to farmers. —*Louisiana State University*

Don't Let 'Em Out Too Soon!

Early pastures provide little feed and cows may ruin them for the year . . .

Condensed from
Wisconsin Agriculturist

WAIT a minute! Better wait before opening the pasture gate for the cows. Open it too soon and you'll take a big cut in the amount of pasture you get this season.

Those fields go through a pretty tough winter. And if you were in a drouth area last summer they didn't get a very good start before winter overtook them.

Bluegrass pasture should be a good 3 to 4 inches tall before you open the gate. Alfalfa ought to be about 8 inches high, ladino at least 4 or 5 inches.

Several Grazing Methods

There's a lot of different ideas as to the best way to graze pasture. But there's one thing you should keep in mind. More than half of the total annual yield from your pasture comes during the first one-third of the pasture season. By the middle of the grazing season the pasture has made two-thirds of its total growth for the year.

So if you keep the pasture grazed down closely for the first two or three months the cows are on pasture, you can figure you're not going to get much grazing for the rest of the season.

Plan on changing pastures as often as possible. Every day is best, but you may not be set up for it. Next best is to change them every week. That is if you want to get the most from your pasture.

As you know, the cows—or any other farm animal for that matter—don't eat the plants down to a uniform height. They'll do it only if they're confined to an area so small that it is pastured out completely within a few days.

If you use a quick rotation system, once the grass is grazed down move the cows out to a new area. Electric fences work well here.

If you're going to graze the same field any length of time, watch to see that they don't eat it down too short. Blue grass shouldn't be grazed shorter than 1 to 2 inches. Don't graze down ladino shorter than 4 to 5 inches.

Reprinted by permission from Wisconsin Agriculturist, Racine, Wisconsin

Brome grass and alfalfa take even more care. For highest yields you have to keep a growth of 8 to 10 inches during May and June and not less than 4 inches high during the summer.

If you use a rotation of only a few days, you can graze down closer. But then give the pasture a rest. Don't turn back until the growth is again 6 to 8 inches high.

Deferred grazing is one method. You can hold back some fields for later grazing. Some grasses, like orchard grass, will get rank and stemmy if you don't keep it grazed down. On the other hand, the feeding value of brome grass goes down little and the carrying capacity shoots up by delaying grazing until the grass is 10 inches high.

You can also cut hay or grass silage off fields that you intend to use for summer grazing. Put the surplus in the silo. You can cut it for hay. But chances are you will run into fickle spring weather.

Put Surplus in Silo

Cut these fields when the forage is around 8 or 10 inches high. This way there will be enough moisture left in the soil and it will still be early enough to get a lot of lush growth after this first cutting. By the time it's ready to graze, your early pastures will be playing out.

To get as high a yield as possible on these deferred grazing fields, it's best to pile the fertilizer on them early in the spring. If you haven't fertilized them yet you'll still get some extra grass by top dressing them even after you've taken off the first cutting. Five hundred pounds of 16-8-8, 14-7-7, or similar fertilizer, works well here.

Cows Eat 350 Pounds Daily

There seems to be almost no limit to how much a cow can eat, according to a recent feeding trial by Kansas State University. This research was done, the Kansas report says, to compare the feeding value of silage and green chop.

In an experiment, a seven-year old Holstein cow stowed away 350 pounds of freshly chopped alfalfa-brome daily. She was fed no grain and no other roughage.

The 350 pounds of grass contained 39 pounds of dry matter. The cow gave 53 pounds of milk per day, and with 100 days yet to go in her current lactation, produced 10,807 pounds of milk and 427 pounds of butterfat. *Grassland News*

Hog Raising In North Ireland

Faced with ruinous problems, the resourceful Irish developed new methods of raising hogs. Now, the "hot house" method is being used in this country. In this article translated from a German farm paper, an eyewitness tells you about it . . .

Condensed from Deutsche Landwirtschaftliche Presse,
Dr. Cramer
Translated by Herbert Steiner

January 28, 1961

(Observations made on a study-trip)

SEVERAL years ago the hog industry in Ulster (North Ireland) was threatened with complete collapse. The big problem was the unusual climatic conditions. Imagine: no winter temperatures under 32 degrees, summer temperatures rarely over 70 degrees and more than 40 inches of rain per year. To put hog raising on a profitable basis new methods were developed and have been successfully used over the past six years. Some of the things the Irish learned are now being tried in other parts of the world.

I visited two large farms with a production of 15,000 and 17,000 bacon type hogs per year. The breeding and feeding goal is to produce a 200 pound bacon hog. For feeding they prefer a crossbred hog with a high percentage of Large White and of Swedish Landrace blood.

Farrowing takes place in farrowing boxes of different types of construction. The most successful have been the so called "Farrowing silos" which can be built in any type of a barn at low cost. All the farrowing aids are designed to give the young pigs 1) infrared radiation 2) a temperature of 90 degrees 3) absolute absence fram drafts right from the time of birth.

In the farrowing silos the sow can only lie down in a way that places her teats in the warmth of a heat lamp, and the pigs do not need to leave the zone of warmth to feed.

Six to seven days after farrowing the sow and her pigs are put on pasture for about 10 days. Before this they have been given an injection of iron. By pasture and by iron injection the hemoglobin content of the blood is raised. On

Reprinted by permission from
Deutsche Landwirtschaftliche Presse, Spitalerstrasse 12, Hamburg, Germany

the pasture are shelters so well insulated that temperatures rarely drop below 68 degrees. After the 10 day period the sows and pigs are put together with all their pigs and 18 to 20 of the best pigs are taken away. In this way the remaining pigs get more mother's milk and can develop better. This type of weaning also helps the sows' heat period.

The rest of the pigs are weaned at about 8 weeks at a body weight of 45 to 50 pounds. Following this method, the operation with a total of 600 to 700 sows achieves a yearly average production of 18 pigs per sow. The majority of these are fed out to market weight right on the place, but a few are sold.

In the hog feeding operation various methods are used. Recently there have been strong differences of opinion (in Germany) about these methods. Let us say however, that it is difficult to understand when one hasn't actually seen the different methods first hand.

Due to the climatic reasons mentioned at the beginning of this article, new methods have also been sought for feeding out the hogs. This is why the "hot house" system and its various modifications were developed. The most important factor is the temperature and the ventilation in the barn. Drafts as well as low temperatures with a high relative humidity are very detrimental. The "hot house" system takes this into consideration.

The buildings used are mostly old ones which have been remodeled. The pens, each with an area of about 80 square feet, are completely shut off from each other. The buildings have a slanting shed-type roof about 8 feet high at its highest point and dropping down to 6 feet at the end. The roof is of corrugated sheet metal under which there is a 2 inch air space. Beneath the air space is a layer of asbestos and under the asbestos, fiberboard. This fiberboard has been found to be the only economical material which stands up under the constant high moisture conditions. There are no troughs or feeding devices in the pens—only automatic waterers. The feed is dumped directly on the floor of the pen. The heating of the pens is achieved through the heavy insulation. A few small windows and adjustable cracks on the doors provide the only light and ventilation. The manure flows out under the doors in special canals which lead to a central collecting place.

It is a wicked thing to be neutral between right and wrong.

There are two hogs per square yard in the pens. Three feet above the floor of the pens the tempera-

ture is 86 degrees and the relative humidity is 95 per cent. A thick layer of mold covers the walls and the ceiling. The animals are kept constantly in an atmosphere saturated with moisture. The new pens are all being built in the 90 square foot size to hold 20 hogs for the whole feeding period.

In a variation of the extreme "hot house" system there is less insulation and relative humidities of only 65 to 70 per cent are reached. In these pens the floors are dry except for the manure spots. Here also the pens are completely shut off from each other and from the center aisle. According to the manager the losses with this system are only one per cent.

Two different feeding combinations are used. In one the liquid fed is a whey-skimmed milk mixture; in the other, water. The liquid is fed through the automatic waterers four times per day and they are allowed as much as they want. About 12-15 quarts per animal are consumed each day.

The dry feed consists of ground grain in the following combination.

82 per cent barley
10 percent wheat
5 per cent fish meal
3 per cent aurofac (an antibiotic mineral mixture)

This formula stays the same for the whole feeding period. The amount, *not* the combination is the only thing changed. Those which are fed the whey-skimmed milk combination get 23 ounces of this feed per animal per day at the beginning of the feeding period. Later this is increased to 32 ounces per day. Those which are fed only water as liquid are started at 32 ounces per day and later increased to 64 ounces.

They are fed only once a day and the feed is merely dumped on the floor. At all other times absolute quiet reigns. The growing period from the 45-50 pound weight to 200 pounds takes 150 days. The average gain is one pound per animal per day. During this period the animals are never weighed. The purpose of the high temperatures is to prevent the hogs from putting on fat.

Children never put off until tomorrow that which will keep them out of bed tonight.

The hogs are disposed of through the marketing b o a r d which is a cooperative organization which negotiates between the bacon processors, the producers, the consumers, and the ministry of agriculture. It has great influence on prices, and tries to keep a uniform price the year around. When necessary the government supports the price by direct subsidy. The best price is for

a carcass weight of 143 pounds with a shoulder fat thickness of about .20 inches (note that this is 2 tenths of an inch.) and a loin fat thickness of .12 inches, (again only 12 hundredths). Payment is made directly on carcass quality.

The researchers in Ulster like the "hot house" method. With its various modifications it seems to be the only way for them to feed hogs. It must be understood that North Ireland represents a special kind of climate and solely a bacon market.

The "hot house" method stands in direct contradiction to all our ideas of animal health and hygiene, but its success justifies it. Whether this method can make hog raising more profitable under other conditions of climate, feeding aims, and labor, can only be determined by actual trial.

No Cattle Shortage

In spite of strong cattle prices there is no shortage of cattle, according to Kenneth Jameson, farm management specialist at Colorado State University.

Jameson said prices aren't likely to go any higher this fall than last and unless something drastic happens, prices will likely be a little lower. A severe drouth this summer could upset the market.

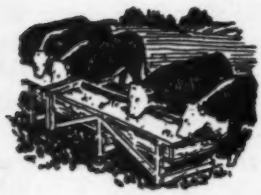
He said much of the feeder cattle offering this spring is likely to be on the fleshy side. Lighter cattle may be difficult to find.

—Colorado State University

We are in danger of losing public interest and public backing for the work of conservation. More and more Americans are living in cities and fewer are maintaining a close association with the land. They have little sense of urgency about resources except in times of flood, midsummer drought, or dust storms. These are facts calling for increased attention to public information and education.

The program of conservation information and education has deteriorated steadily in recent years. The Soil Conservation Service, for example, has had a serious cut-back of almost 50% during the past 10 years in the number of trained men working in this field. The number of offices with such men has been cut 25%. Less conservation information is being made available to the public. Less work is being done with the schools. *—Tuesday Letter*

Selecting Meat Type Steers



Meat type steers are here. We need to increase their numbers and — at the same time — learn to discriminate against the over-fat "dogs" and meatless wonders . . .

Condensed from
The Polled Hereford World /
W. A. Cowan, University of Connecticut

WE NEED to place emphasis on "meat type" steers in a manner similar to the swine industry's approach to the "meat type" hog and the poultry industry's "chicken of tomorrow."

All food products are in competition for the consumer's dollar. Although beef is at present in the king row as judged by per capita consumption, the surest way to keep it there is to make it cheaper and make it better. Doing this will involve not only improved breeding, but an environment that permits this to express itself.

What is the situation? We have meat type steers today. They are a reality. They can be improved with time. We also have too many tallow carriers with a poor ratio of lean to fat and conversely some that won't put on enough condition at the age and size we want. In addition, in steers that are favored in conformation on the hoof, we find much variation when on the rail; variations in muscling, fat cover, marbling, tenderness, juiciness, wastiness and all the multitude of things that affect consumer satisfaction and prices paid.

We live in a country and world that is increasingly calorie conscious. In this country, we live in an economy of abundance and much competition at the meat counters of our super markets. A piece of choice beef eaten today needs to be the same in high value as the one two weeks ago and the one a month from now. To an increasing extent, our retailers are demanding standards of performance, in the carcass and cuts. We can expect that this trend will continue.

The right kind of meat type steer will help guarantee beef a place in the economic sun.

A Story of Waste

The University of Connecticut successfully exhibited a show steer

Reprinted by permission from
The Polled Hereford World, 720 Delaware Street, Kansas City 5, Missouri

in 1958. He won his class at one show over about forty others. A little later, he stood third in a strong class at a stronger show. When we brought him home, we slaughtered and cut him in our meats laboratory. His retail cuts were trimmed of excess fat so that they would be marketable through our salesroom. We actually trimmed 260 pounds of fat off his carcass and cuts before we sold the meat. His rib-eye at the twelfth rib measured 11.78 square inches—small in relation to his live and carcass weight.

This example of waste has been repeated to a greater or lesser extent scores of times over the country. He certainly was not meat type when slaughtered and was "far over the hill" in excess condition. He was mellow to touch and too much so. We have worshiped at the "myth of mellowness" to excess and are slowly learning that the really mellow ones have just too much "bark" when cut.

A Story of Differences

At a beef field exhibition held at the University of Connecticut, we presented the loins and ribs of widely different cattle to the audience so that the lessons of meat type would be visual. The data on fat cover and rib-eye size and marbling are in Table 1 at the end of this article.

These cattle were not of the same weight. The over fat steer dressed the highest per cent, but was extremely wasty and lacked muscling and meatiness. This brings out the point that dressing per cent per se is not the ultimate answer. If, instead, dressing per cent was based on poundage of trimmed high quality cuts, it would be more indicative of the salability of the meat and value of the carcass. The thin steer was definitely lacking in fat cover and marbling, although fairly good in rib eye size. The dairy animal lacked muscling. Certainly not all dairy cattle are in this category.

In the past, too many of our show ring steer winners have somewhat resembled the over fat steer in carcass data. In the International Livestock Show's Beef On the Hoof-Carcass Contest of 1958, in one breed's summer yearling class of 74 steers, rib eye measurements ranged from 8.5 to 19.6 square inches; fat cover .7 to 1.5 inches. Six of the first eight steers on the hoof did not place in the first ten in the carcass. The 14th steer on the hoof was first in the carcass with 14.0

About 63 per cent of all purchases of farm land in the year ended July, 1960, were made by farmers. About 45 percent of the purchases were made to enlarge existing farms.

square inches of loin eye and .7 inch of fat cover and excellent marbling. This is cited only to bring out the wide differences that exist, and the fact that there is much room for improvement.

What Is A "Meat Type Steer?"

Some carcass characteristics:

1. At least two square inches of rib eye per 100 pounds of chilled carcass weight. The best we have had on rib eye size in our meats laboratory at Connecticut was a youthful carcass that graded choice and had 3.6 square inches per 100 pounds of carcass.

2. .3-.9 inches of cat cover over the rib eye. Many of us have seen carcasses with excellent lean quality and marbling with a minimum of fat cover over the rib. We want the fat in between and within the muscle fibers if we can get it. Some cattle have it with a minimum of external cover, others have to have much excess cover before having the internal marbling. Some never get it, regardless of external cover.

3. Rib fat cover to rib eye area ratio of at least 1 to 15 or wider.

4. Light kidney knob and internal organ fat.

5. More rear than fore quarter.

6. A steer that can grade choice at 480 to 700 pounds on the rail and reach this in 12-18 months depending on feeds fed.

7. At least 1.4 pounds of chilled caracss weight per day of age when given the opportunity to gain and finish.

8. The meat should be tender and of excellent flavor. Tenderness seems to be highly heritable.

On The Hoof Appearance

1. The "meat type steer" like the meat type hog is characterized by muscle with quality.

2. They are wide over the backs and heavily muscled over the ribs, loins, rump, and quarters. Muscling is present in the forearm and the rear quarter is deep, wide, and extends well forward into the stifle and hip. He feels firm and heavy fleshed, not soft and flabby.

3. A meat type steer is free from excess fat rolls on his neck and brisket, along his shoulder and behind it, over his ribs, in his flanks and over his hips and rump. He is adequately, but not overly, finished.

Don't ever prophesy: if you prophesy wrong, nobody will forget it. If you prophesy right, nobody will remember it.

4. He may have more clean flat bone and a bit more body length than many are accustomed to.

5. He should have natural depth, yet be free from waste and be trim about his middle, as viewed from the side and rear.

Selection Is Possible

With some changes in our thinking and past standards. I believe we can successfully select meat type steers with "eyeball" appraisal. We must: (1) be less impressed by excessive fat and mellowness and more impressed with heavy muscle adequately covered; (2) do less judging from the side and more from the rear and front; (3) be guided by the lessons we can learn from following animals through to the carcass and cut-out value; (4) recognize that excess fat may look pretty to the ringside, but is far from desirable anywhere else; (5) be willing to change for the good of the industry.

Physical measurements, ultrasonics, and core sampling offer objective possibilities to help our understanding of what is under the hide of living beef cattle. We seriously need an accurate, easily applied objective method of determining the composition of live cattle.

The future is bright if we translate an expanding pool of knowledge into action in establishing and constantly improving standards for meat type steers that will yield the kind of beef most of us like at the lowest possible cost. The meat type steers already hung on the rails of our packing houses and experiment stations can help point the way for the entire industry. Meat type steers are here. We need to proliferate their kind, improve them and care for them, so that they answer our standards. At the same time, we must rapidly learn to discriminate against the over-fat "dogs" and the meatless wonders.

TABLE 1

Animal	Rib Eye Sq. In.	Av. Fat Over Rib Eye (in.)	Range in Fat Over Rib (in.)	Ratio Fat-Lean	Marbling
Thin Steer	11.5	.15	.1- .4	1:76.6	Poor
Over Fat Steer	9.2	1.80	1.5-2.5	1:5.1	Very Good
Meat Type Steer	13.5	.65	.5-1.0	1:20.7	Very Good
Dairy Cutter ..	6.9	.45	.2-1.0	1:15.3	Poor

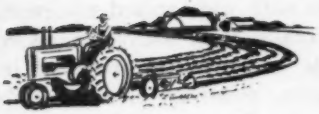
Cattle use corn more efficiently if it's processed in some way—ground, cracked, rolled or otherwise processed, C. E. Summers of Iowa State University believes.

He says the particular process used—ground, rolled, cracked or other—is less important than the fact the corn is processed. However, he warns, don't grind the corn too fine.

When ear corn is ground fine cattle have a tendency to push the fine portion into the corner of the feed bunk and refuse to eat it.

—Iowa Farm Bureau Spokesman

Are You Getting Your 20% Crop Yield Bonus?



There's little excuse for up-and-down hill farming. Work in the contour and you save 10% in fuel cost and cover 10% more ground, not to mention your soil . . .

Condensed from Tractor Farming

ARE you making as much money as you think you should?

If you're not, there may be something wrong with the way you're farming. But, this is not unusual, because an alarming proportion of farmers are not farming as well as they know how.

Despite great soil and water loss, they're still farming willy-nilly up and down the hill. They're passing up increased yields, lower operating costs, and savings in time and labor. They're losing the higher net farm income that goes with conservation farming.

Farmers and ranchers who have turned to conservation farming promise you 20 to 25 per cent higher yields per acre if you will put to work the soil conservation practices needed on your land. This boost in yield is your bonus for good farming practices that not only conserve fertility, but also build up soil productivity.

This conservation payoff shows up in a special seven-county study in Illinois. Farms were rated as high or low score conservation farms, depending on the number of conservation practices on each farm. High score farms averaged more than $7.00 higher net income per acre than farms in the low score bracket. Net income for one group of high score conservation farms actually jumped from $12.46 an acre to $21.23 during a five-year period. Income per acre on similar farms with low conservation score increased from $12.91 to $13.86, a gain of only 95 cents.

Fortunately, the most important conservation practices like farming on the contour, strip cropping, or terracing, are relatively simple. Best of all they are either free, or cost very little. And your county agent, soil conservation technician, or vocational ag teacher will help you make your

Reprinted by permission from Tractor Farming, 180 N. Michigan Avenue, Chicago 1, Illinois

plans and put them into operation.

Easiest and most profitable of the practices is to farm around the hills, on the contour, rather than up and down the slopes. And when you farm on the contour, every furrow, every cultivation mark, and every wheel track becomes a miniature dam that holds or slows the movement of water on the land, and reduces soil erosion.

The table at the end of this article shows how contour farming saved soil, reduced water runoff, and increased yields in Iowa. It could work just as well on your farm or ranch.

From Minnesota comes proof that planting corn on the contour can be expected to increase yields by 5 to 10 per cent the very first year. Twelve farmers, cooperating with the College of Agriculture in Minnesota, planted part of each field up-and-down the slope and the remainder on the contour. The contoured corn averaged 82 bushels. This was 10 bushels, or 14 per cent more than the yield on land farmed up-and-down the slope.

Some farmers and ranchers still farming up-and-down the slopes don't recognize all the benefits of contour operation. Others think it takes too much time, or it is too difficult to follow with mechanized equipment. Actually, with today's maneuverable tractors, self-propelled machines, two-way plows, and hydraulically controlled equipment, there's little excuse for up-and-down hill farming.

A Wisconsin study showed a 10 per cent saving in fuel cost, as well as 10 per cent more ground covered when the work was done on the contour.

A study of 66 fields in western Indiana indicated that contour farming required 11 per cent fewer man-hours of labor than land farmed up-and-down hill. Experimental work in Kansas showed you can cut tractor fuel consumption 10 per cent, operate at higher rates of speed, and cover 12 per cent more land by farming around the slopes.

Like farming on the contour, strip cropping, terraces, grass waterways, and other conservation practices are guaranteed to pay you dividends far above their cost. If you can see the tell-tale tracks of erosion—small washes, ribs, small ditches, and silt deposits on the bottoms—you qualify for a worthwhile bonus from conservation farming.

How farmed	Soil loss in tons per acre	Run-off in inches per acre	Yields bu. corn	Yields bu. oats
Up-and-down hill	30.44	4.02	69.1	26.8
On the Contour	10.84	2.78	77.8	30.0

Fantastic Pest Control Methods

Pests are always with us. These are the new control methods coming to combat them . . .

Condensed from Successful Farming

Wayne E. Swegle

IT LOOKS as if the "bad guys" of the insect world won't have a chance when the "good guys" in our scientific laboratories perfect some of the new weapons they're working on.

More bugs are going to be irradiated, they're going to be chemically sterilized, you'll be given powerful attractants to lure them to their death, we'll breed some mean parasites to bite them —in short, the life of a bug is going to get worse than that of a horse thief in a TV western.

The "good guys" in this report are the scientists in the United States Department of Agriculture, in our state agricultural colleges, and in the laboratories of many private companies developing new products.

Attractants

Byron T. Shaw, administrator of USDA's Agricultural Research Service, recently gave some predictions of new control methods ahead. He mentioned the possibility of combining chemical insecticides with insect attractants —placing them near crops infested or in danger of infestation by insects. Insects would be attracted away from the crop to the poisoned bait—and killed.

One such combination now is being tested against oriental fruit flies in the Bonin Islands in the western Pacific—where there is a natural infestation of the fly. USDA scientists are impregnating small squares of absorbent fiberboard with methyl-eugenol, a powerful attractant, and an insecticide. The boards are being distributed around islands. If the test is successful, scientists will intensify their efforts to find similar attractants for other pests of crops, animals, and man.

Chemical Sterilization

Here's another approach our imaginative scientists are working on—chemical sterilization of both male and female insects. The right kind of chemical sterilant

Reprinted by permission from Successful Farming, Des Moines 3, Iowa

might easily outdo some of the best insecticides now in use. Mathematically, it works like this:

● In a hypothetical situation involving a million insects that multiply 5 times each generation, an insecticide that kills 90% of the insects would leave 125,000 insects still alive after the third generation.

● However, a chemical that would produce 90% sterility without affecting sexual behavior would leave only 125 insects alive after 3 generations.

Reason for the difference: All 10% surviving the insecticide may reproduce. But with the sterilant, the 10% that remain fertile will mate with infertile flies 9 times out of 10—thus only 1% will actively reproduce.

Resistant Crops

We're breeding crops that are more resistant to insects. We have wheat that is resistant to the Hessian fly and the wheat stem sawfly, corn resistant to the European corn borer and corn earworm, and alfalfa resistant to the chinch bug and spotted alfalfa aphid.

Biological Warfare

Further, we've declared biological warfare on plant and insect pests. Example: Insect parasites released in Mexico against the citrus blackfly have held this pest in check and reduced the possibility of its becoming established in this country.

Parasites and diseases also are being used to reduce populations of the European corn borer, sugarcane borer, spotted alfalfa aphid, and Japanese beetle.

One of the most interesting examples of biological warfare against insects—that of sterilizing male screw-worm flies by irradiation and releasing them—is now being tested against oriental fruit flies and melon flies. It may be useful against other major pests such as corn borers, codling moths, and cattle grubs.

Half the problems of the human race are due to lack of business knowledge—knowledge of what is their business and what is none of their business.

Two newer possibilities along this line recently have been proposed. One is to produce and release diseased insects that will infect and kill their own kind. It's believed that a disease-carrying male could destroy the reproductive capacity of several females if the disease organism is transmitted each time he mates.

The other possibility is to produce and release insects having inferior or death-producing characteristics in their genetic makeup—that would be passed on to

succeeding generations and destroy the insect race.

Example: A codling moth that could not hibernate might be made to reproduce in the laboratory. This defect probably wouldn't interfere with mating when the defective insects were released in fruit-growing areas. But all offspring that inherited the defect would die because they couldn't survive the winter.

Combinations

Looking to the future, Shaw thinks the greatest benefits from biological methods may well come from using them in combination with chemicals. For example, in eradicating large populations of any major insect by self-annihilation, it may be necessary to use chemicals at the beginning to reduce the natural population to a relatively low level—and then release defective or diseased insects to finish up the job.

All of these ideas may not work out, but some fascinating methods and materials are in the works.

Whole Milk Keeps Young Calves Gaining

Milk is ideal to satisfy the need of young calves for nutrients, as shown in tests at the University of Illinois. K. E. Harshbarger, dairy scientist, reports these results of experimental work with milk substitutes.

Average daily gain of the calves fed milk substitutes, calf starter and hay was about one pound a day for the first 16 weeks of their lives. The substitutes were fed from five days to eight weeks of age in place of whole milk. Colostrum milk was fed during the first four days. The average daily gain was 1.26 pounds a day in a control group of calves fed about 360 pounds of whole milk, calf starter and hay.

In addition to these differences in gain the general appearance of calves fed whole milk was more desirable. Whole milk contains nutrients in a form that the young calf can readily use.

Differences in gains were greatest at four weeks of age, when calves were weighed every four weeks. After four weeks of age, the feeding of milk substitutes, calf starter and hay resulted in good gains.

Experiments on milk substitutes are being continued this year. At present, whole milk is being fed for the first 10 to 14 days before starting the calves on the milk substitutes. Since milk is the ideal feed for the very young calf, it will give the calf a good start before it is switched to a milk substitute. —*University of Illinois*

Figure Your Cost Before Buying Machinery

Total yearly cost of owning machinery may be more than you realize. Here is how to figure it . . .

Condensed from The National Future Farmer

ASSET or liability? This should be your foremost consideration when thinking of buying more or bigger equipment.

The answer is easy enough to get. All you need is a pencil, paper, your farming records, and some simple mathematics.

The bigger pieces of equipment, such as hay balers, combines, and forage harvesters must have a lot of annual use to be a good buy. If you don't have a big volume of work, you may be better off to let a custom operator do the job.

Then again, custom machinery work may present some problems, making it cheaper in the long run for you to own the machinery. The custom operator may not be available when needed or doesn't do the work the way you want it done.

Another prime consideration should be your own labor. If a custom operator does the work, can you put your labor to efficient use? If not, you end up paying the custom operator for his labor while yours is idle—and idle labor means lower income.

Some farmers have a mistaken idea that the biggest and latest farm machinery makes more money. Kenneth Loope, an extension ag economist at Virginia Polytechnic Institute, tells about a visit with a farmer who had 100 acres in crops—and a machinery investment of $100 per acre. The annual repair cost alone of his machinery was more than an efficient farmer nearby had invested in all machinery. This is not an isolated case. Many farmers believe in a lot of machinery, but if they ever calculate what it costs them, they may find it isn't paying off.

Some farmers can do custom work for other farmers cheaper than the farmers can do it themselves due to spreading the overhead over a larger acreage.

Use this simple formula to see if it would be cheaper to own a

Reprinted by permission from The National Future Farmer, Box 29, Alexandria, Virginia

certain machine. Total annual overhead cost, divided by the custom rate minus operating cost (per bale, acre, tons, etc.). The answer is the "break-even-point" in bales, acres, tons, or whatever you might be working with.

Overhead and operating costs are the two big factors in machinery buying. Overhead costs are going to be the same each year, whether the machine is used or not. The cost of operation is the variable—it increases as you do more work.

The so-called "DIRTI 5" — depreciation, interest, repairs, tax- and insurance—make up overhead costs. Here is how to figure overhead. Depreciation: divide machine's expected years of life into the purchase price. If expected life is 10 years and purchase price is $500, depreciation is $50 yearly. Interest rates differ from area to area, but we will use six percent of one-half the purchase price. Six percent of one-half $500 equals $15. Taxes and insurance come to about one and one-half percent of the purchase price. One and one-half percent of $500 equals $7.50. This gives total of $72.50 in overhead costs (not counting repairs) each year for the $500 machine.

Size and Type

You don't want a two-row tractor when a four-row one would be more economical. Before deciding what size machinery, you need to know total operating costs per acre for each.

A one-row corn picker used on 20 acres of corn each year in Virginia had a total operating cost of $6.30 per acre (including power). The two row picker cost $8.56 per acre on 20 acres. With 30 acres, the cost for the one row picker was $3.52 and $4.16 for the two row. When over 80 acres was harvested annually, the two row picker was cheaper to operate. The cost to harvest 90 acres was $3.02, for the one row picker and $2.86 for the two row picker. It's easy to see that on the basis of these costs the farmer with over 80 acres of corn will be better off with a two-row picker.

You should also be sure to get the type of equipment that will pay the biggest dividends. Whether to buy a hay baler that uses the tractor power take-off or one with an auxiliary motor is a good example.

A pintail duck was recently caught on Cook Island in the South Pacific, which had been banded 3 months and 4,700 watery miles away.

Extension economists in Virginia have figured that total overhead cost on an $1,800 hay baler with power take-off is about $292 a year. Overhead costs per year for a $2,600 auxiliary motor hay

baler was found to be $424. Cost of operation for each ton of hay baled was calculated to be $1.48 for the power take off baler and $1.42 for the auxiliary motor baler. The operator's labor or the operating cost of the tractor is not included in these figures. The more hay baled per year means a lower cost per ton, as these figures from Virginia show:

Tons	Power Take-off	Aux. Motor
20	$16.08	$22.62
40	8.78	12.02
100	4.40	5.66
200	2.94	3.54
300	2.45	2.83
500	2.06	2.27

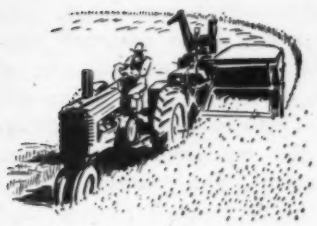
Now use the formula for figuring the break-even point to see if custom operation would be more economical for you. Let's compare custom baling with the costs of owning a power take-off baler. Referring to the above costs, overhead cost for one year is $424. Say, for example, hay is custom baled in your area for $6.00 per ton. Custom rate of $6.00 per ton minus operating costs per ton of $1.48 equals $4.52. Now divide $4.52 into $424. This gives you a break-even figure of about 94 tons. This means it will pay you to own the baler if you put up over 94 tons of hay a year.

These are only a few examples of what it costs to operate farm machinery. You will be interested in others, such as the difference in operating costs between a two- and a three-plow tractor or a six- and 10-foot combine. Your state agricultural college probably has information sheets on the cost of operating different sizes of equipment in your area. Spend some time comparing costs of operation and your net income will show the results.

Agriculture, A Bright Future

Agriculture offers a bright future to young men and women. A recent study indicates that farm production must increase by about one-third in the next 15 to 20 years if we are to meet the demands of our growing population. Experts predict that the U. S. population will exceed 210 million people by 1975. Yet, the land available to produce the necessary food and fiber will diminish. Furthermore, it is expected that there will be a decrease in the number of farms and farm workers. So fewer farm people must feed a greater population. The country will look to agriculture for the necessary increased production. This will demand increased research activity, intensified agricultural extension and education, and a tremendous expansion of agricultural business and services. The demands will be profound but the future appears bright.

Farm Work Timetable



A comprehensive table in this article lists the approximate time needed for various farm operations to help you plan purchases of equipment . . .

Condensed from
Ohio Farm and Home Research
R. H. Blosser

SHOULD you buy larger tractors and machinery to raise crops?

Have you ever tried to answer this question by figuring out the amount of time you would save or the additional acreage you could farm with larger equipment? Many farmers say they cannot make these calculations satisfactorily because they do not know how much time is required to do a particular job with different size tractors and machinery.

To provide farmer and agricultural planners with up-to-date information for making these calculations, a detailed study of labor and machinery use was made in 1958 on 124 farms in five counties in Ohio. Data on man labor, tractor power and machinery use were collected by means of record books in which the farmers recorded the following information on the crop work as the various jobs were performed: acres of land covered, number of man and tractor hours used, number of men in the crew, and size of tractor and machine used for the specific operation.

The amount of man labor, tractor power and machine time used per acre by these farmers to perform the various jobs needed to produce crops are given in the table. These time requirements are stated in two ways: one is the amount of time used by the typical or average farmer; the other shows the range in the amount of time used for each job for the middle 50 percent of the farmers. One-fourth of the farmers did their work faster than the bottom figures show, while another fourth required more time than the top figures indicate.

The amount of work accomplished in a given time varied considerably because of differences in size of machine used, rate of speed machine was operated, age and condition of machinery which influenced the

Reprinted from Ohio Farm and Home Research, Ohio Agricultural Experiment Station, Wooster, Ohio

number of breakdowns, time required to move machinery to and from fields, weather, yields and size of fields. About five percent less labor and power were needed to plow sod and plant and harvest corn when size of field averaged 35 acres instead of 13 .

By using the time requirements from this study, you should be able to calculate fairly accurately the amount of man labor, tractor power and machine time needed to produce an acre of corn, soybeans, small grain and hay. This can be done for different size equipment and tillage operations. For example, if you are thinking about plowing and planting corn in one operation, you should be able to figure out how much time this method

TIME USED IN FIELD WORK

Job done	Size of tractor used*	Man hours used per acre	
		Average	Range for middle half of farms
Plow with 2-14" plows	2	1.25	1.12-1.45
Plow with 3-14" plows	3	.92	.75-1.00
Plow with 4-14" plows	4	.58	.50- .67
Disk with 7 or 8-foot disk	2,3	.39	.33- .47
Disk with 9-foot disk	3	.31	.27- .41
Disk with 10-foot disk	3,4	.28	.22- .32
Disk with 12-foot disk	4	.24	.21- .25
Drag with 10-foot drag	2	.39	.33.- .50
Drag with 12-foot drag	2,3	.32	.26- .35
Plant corn and soybeans, 2-40" rows	2,3	.55	.44- .65
Plant corn and soybeans, 4-40" rows	2,3	.29	.25- .35
Rotary hoe corn and soybeans, 2 rows	2,3	.27	.23- .33
Rotary hoe corn and soybeans, 4 rows	2,3	.15	.13- .18
Cultivate corn and soybeans, 2 rows	2,3	.49	.40- .56
Cultivate corn and soybean s,4 rows	2,3	.26	.22- .33
Spray corn with 6-row sprayer	2,3	.17	.15- .23
Pick corn with 1-row picker	2,3	1.65	1.36-2.00
Pick corn with 2-row picker	2,3	.90	.69-1.01
Sow small grain & soybeans, 12 X 7 drill	2,3	.54	.43- .75
Sow small grain & soybeans, 15 X 7 drill	2,3	.46	.35- .60
Sow small grain & soybeans, 17 X 7 drill	2,3	.37	.27- .43
Combine with 5-foot combine	2,3	1.06	.97-1.27
Combine with 6-foot combine	2,3	.90	.72-1.05
Combine with 7-foot combine	2,3	.75	.65- .95
Combine with 10-foot combine	SP**	.46	.38- .59
Combine with 12-foot combine	SP	.42	.36- .50
Mow hay and straw with 7' mower	2,3	.50	.35- .55
Rake hay and straw with 7' rake	2,3	.45	.33- .50
Bale hay and straw	2,3	.50	.40- .70
Seed meadow with broadcast tractor seeder	2,3	.16	.12- .20

* Stated in number of plows tractor is rated to pull.
** Self-propelled.

would save over the conventional way. The time requirement figures that you use will depend upon how you rate yourself with the average farmer in getting field work done.

Crop production also requires some miscellaneous labor such as hauling fertilizer, getting equipment ready for use and making necessary repairs and adjustments of machinery. This amounts to about one-half hour per acre for corn and .4 of an hour per acre for soybeans, small grain and meadows cut once.

Research Points To Limit For Starter Fertilizer Placement

Recent tests at Iowa State University show that under some soil and planting conditions corn roots which develop from the kernel grow horizontally with penetration no more than 1 inch below the seed.

Tests indicate that the frequently recommended placement of starter fertilizers 2 inches to the side and 2 inches below seed level may be too deep to increase the growth of corn plants during the first few weeks after emergence.

George Hawkins of the Soil Lab explained that for two weeks after emergence, the corn root system is made up almost entirely of roots which develop from the kernel. In order for corn plants to benefit from "starter fertilizers" during this period the nutrients should be placed in bands to the side and at or slightly below seed level (no more than 1 inch below).

Soil type and seed orientation seem to influence the direction of early root growth, Hawkins said. In clay loam soils, roots which develop from the kernel may grow horizontally, while in sandy soils the direction of growth of these roots is more nearly vertical.

The researcher pointed out that in his tests, roots which developed from the seed never grew above seed level. Therefore, fertilizer placed above seed level would not have been intercepted until roots developed at nodes on the stalk 1 to ½ inches below the soil surface. *—Iowa State University*

Rules For Insecticide Safety

Condensed from Pennsylvania Farmer

J. O. Pepper,

Pennsylvania Extension Entomologist

HERE are some of the simple rules that are wise to use for safe handling of insecticides in the home, on the farm, or in the garden:

1. Take extra precautions in handling and using all insecticides, such as DDT, chlordane, dieldrin, and all other chlorinated compounds, arsenicals, fluorine compounds, and nicotine compounds. The phosphates are considered more hazardous than most other insecticides. Therefore, take extra care when using materials such as demeton, parathion, etc.

2. When mixing or applying insecticides, take extreme care to keep ingredients out of mouth and eyes.

3. Keep the body well covered. Do not spray or dust with legs or arms and shoulders bared.

4. Wash face and hands or exposed skin thoroughly, after using any insecticide.

5. To avoid accumulation of residues, frequently wash clothing used while spraying.

6. Do not contaminate streams or ponds with insecticide sprays or dusts.

7. Do not leave open containers in which insecticides are being mixed, nor set aside batches of prepared materials, where domestic farm animals can drink or lick them in passing.

8. Burn empty insecticide bags or containers out in the open air.

9. Follow the directions of the manufacturer as to time of discontinuing application before harvesting crops, in order to prevent any residue.

10. Do not keep any household insecticides where foods are stored and be sure that all are distinctly labeled.

11. In the use of fumigants, use only when familiar with their poisonous nature and with methods of application. Otherwise, employ an experienced operator to use fumigants.

12. Always read the labels on containers and follow the precautions listed on them.

Reprinted by permission from Pennsylvania Farmer, Harrisburg, Pennsylvania

Beating "Summer Sterility" In Sheep

Embryonic transfer is throwing some new light on this subject . . .

Condensed from Research and Farming
C. W. Alliston and *L. C. Ulberg,* Animal Industry Department, North Carolina State College

AN UNUSUAL new technique —called "embryo transfer" —is throwing new light on the old problem of "summer sterility" of sheep.

Simply stated, this technique involves transferring a living embryo from one female to another, where it is allowed to complete its development.

Ewes must be bred in late summer if the farmer expects to produce top-priced early spring lambs. Unfortunately, high temperatures at this time of the year often cause temporary sterility of rams. Reproductive performance for most breeds is usually quite low until cool weather comes. The end result of summer sterility is a late, lower-priced lamb crop.

Until recently, summer sterility was thought to affect the ram only. Tests at the North Carolina Experiment Station show that high temperatures may also lower the ewe's fertility by killing the young embryo.

We used 2 different groups of ewes in our tests. These ewes were kept in controlled temperature chambers, one group at 70° F., the other group at 90° F.

Three days after mating, we removed embryos from the ewes. After examining them under the microscope, we transferred these young embryos to the reproductive tracts of ewes from the opposite group. Here the embryos finished their development if they were normal and survived the "transplanting."

The microscopic examination showed us the effect of temperature on the early development of the embryo. By observing the later development of this transplanted embryo, we were able to determine when temperature affects the developing fetus.

Eighty-eight % of the embryos from ewes kept at 70° F. were developing normally 3 days after mating. However, only 62% of the embryos from ewes kept at 90° F. were normal.

Transferring a live embryo

Reprinted from Research and Farming, Agricultural Experiment Station, North Carolina State College, Raleigh, North Carolina

from the reproductive tract of one animal to the uterus of another animal is not an easy operation. Not all of the transfers we made were successful.

Twenty-six % of the embryo transfers from the 70° group to the 90° group were successful, while only 9% of the transfers from the 90° group to the 70° group were successful. These figures compare with 54% success for transfers from one ewe to another in the 70° group.

What are the practical implications of this study? We can be sure of 3 things:

1. The fertility of the ewe as well as that of the ram is lowered by high summer temperatures.

2. In many cases the embryo has been damaged within 3 days after mating.

3. The lower percentage of successful transfers where the recipient ewes were kept at 90° F. suggests that some damage may also occur after the third day of gestation.

Artificially cooling animals, especially great numbers of females, isn't practical on the farm. However, the livestock man can avoid unnecessary stress and excitement of his animals through good management. This could help to keep the animals from getting too hot and partially overcome the high temperature effect.

Although these tests were made with sheep, other farm animals show seasonal variations in breeding performance to some extent. The researcher can use the embryo transfer technique to investigate these breeding irregularities for possible temperature effects.

Ten Goals For The Successful Dairymen

1. Keep 50 or more milk cows.
2. Improve and maintain about 3 crop acres per cow.
3. Obtain above-average crop yields per acre . . . 2.5 tons of hay, 14 tons of corn silage, 75 bushels of oats.
4. Harvest at least 6 tons of hay equivalent per cow.
5. Sell 10,000 pounds or more of milk per cow.
6. Produce 50% of the year's milk during the 6 months, October through March.
7. Spend not more than 20% of the year's milk sales for feed bought.
8. Sell 250,000 pounds or more of milk per man.
9. Hold investment in power and machinery under $350 per cow.
10. Hold annual expense for power and machinery under $125 per cow.

—Cornell University Study

New Subscription Order Form

Send FARMER'S DIGEST to me for

☐ 1 Yr. at $3.00 ☐ 2 Yrs. at $5.50 ☐ 3 Yrs. at $7.75

Name _____

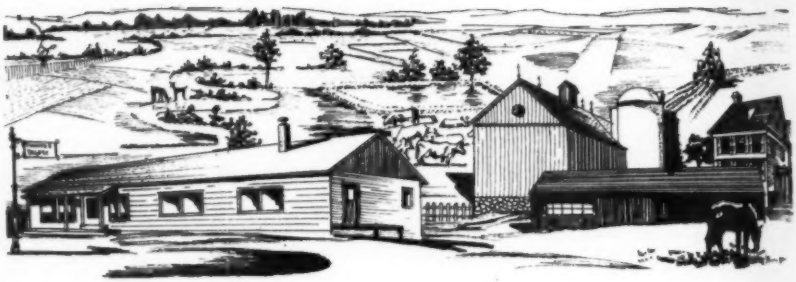
R.F.D. or Street _____

Town and State _____

I enclose $_____. ☐ Please bill me.

Above prices apply to U.S., U.S. Possessions and Canada. Other countries: 3 years $9.25; 2 years $6.50; 1 year $3.50.

Mail to — FARMER'S DIGEST
Fort Atkinson, Wisconsin



Here's a sketch of our farm where we publish Farmer's Digest. Our 200-acres are planted to corn, alfalfa, grass and trees. We farm — and we publish our magazine on a farm — because we believe that's the only way we can know what other farmers want to read. Farmer's Digest is probably the only farm magazine in the world published on the farm by farmers.

FUN ON THE FARM

A Collection of Jokes and Humorous Farm Stories

The Sunday visitors had picked the farmer's fruit and his flowers, and their car was full of plunder. Pointing to an unexplored highway, they inquired of the farmer: "Shall we take this road back to the city?"

"You might as well," replied the farmer. "You've got almost everything else!"

—*Sunshine Magazine*

★ ★ ★

The modern young man doesn't leave footprints on the sands of time—just tire tracks.

★ ★ ★

The cow is a mobile, animated machine — housed in unprocessed leather. One end is equipped with a mower, grinder, bumpers, headlights, wingflaps, and foghorn. At the other end is a milk dispenser and insect repeller.

Centrally located is a conversion plant, consisting of a combination storage and fermentation vat, 3 converters in series, and an intricate arrangement of conveyor tubes.

This machine is also equipped with a central heating plant, pumping system, and air-conditioning.

Although mysterious and secret, this plant is unpatented. It is available in various sizes, colors, and output capacity, ranging from 1 to 20 tons of milk per year.

University of California's Agriculture News Digest

★ ★ ★

Civilization is a system under which a man pays a quarter to park his car so he won't be fined a dollar while spending a dime for a nickel cup of coffee.

★ ★ ★

A man from a foreign country was describing his country to a North American woman.

"Bull fighting is our most popular sport," he told her.

"Isn't it revolting?" she asked.

"No," he smiled, "that's the second most popular sport."

★ ★ ★

A camel is a horse put together by a committee.

★ ★ ★

"Do you know what today is?" asked the wife of her husband who was hurrying off to work.

Hesitating only a moment, and flashing a smile, he replied, "Sure,

I remember." He didn't propose being caught again . . . forgetting the date of his wedding anniversary . . . so that night he returned home with candy, flowers, and some jewelry.

She was overjoyed . . . as he said smugly . . . "You see, I did remember what this day is."

To which she warmly replied . . . "Indeed you did, darling, and you've made it the most wonderful and happiest groundhog day of my life!"

—*Michigan Farmer*

★ ★ ★

Don't marry for money. You can borrow it cheaper.

★ ★ ★

Two boys were helping a strict old farmer during sugaring. Coming in with a load of sap at dusk, the boys started to unhitch the horses.

"Hey," called the farmer, "is there any more sap in the buckets?"

"Not much," replied the boys, "There isn't enough to amount to anything and it's almost dark."

"Go get that sap!" roared the farmer.

The boys drove off, fuming. Well out of sight of the sugar house, they stopped at a little stream. Taking their pails they filled the gathering tank with water. After a reasonable length of time they drove back to the sugar house and unloaded.

Next morning, the farmer, bleary-eyed from boiling water nearly all night, remarked sourly, "Sap sure isn't very sweet this year!" —*Raymond W. Brown in American Agriculturist*

★ ★ ★

An elderly retired couple from a remote town were visiting New York for the first time. The sights seemed to interest the old gentleman more than his wife, who finally exclaimed, "John, the way you stare at these city women is something scandalous! A body'd think you'd never seen legs before."

"Well," John mused, "that's what I was thinking myself."

★ ★ ★

Women are to blame for most of the lying which men do. They insist on asking questions!

★ ★ ★

A cranky old man invested in one of those new hearing aids that are almost invisible. A few days later he returned to the store to express his delight.

"I'll bet your family likes it, too," said the salesman.

"Oh, they don't know I've got it," said the old man. "And am I having a ball! In the past two days I've changed my will twice."

—*The Balance Sheet*

★ ★ ★

Women's Tears—The most efficient water power in the world.

★ ★ ★

The mother of a family in town was trying to explain to her two

pre-schoolers the fact that they were soon to be joined by a baby brother or sister. She diplomatically explained the present location of the expected offspring and noted that its presence was the result of a seed.

The younger of the two boys, eyes wide with wonder, exclaimed, "What kind of seed?" To which the older and more sagacious of the two promptly replied, "Why it's a bean seed." That one completely flabbergasted the mother and she asked the meaning. "Why, haven't you ever heard of a human bean?" —*Mexico (N. Y.) Independent*

★ ★ ★

When adults, act like children, they're silly. When children act like adults, they're delinquent.

★ ★ ★

A city visitor asked an old French peasant about his cows.

"Why," he said, "do some of them have no horns?"

"There are three cases," said the old peasant. "Some are born without horns, some are dehorned, and some knock their horns off fighting."

"And what about that one in the corner?" the visitor asked.

"Ah," said the peasant. "That is a fourth case. That is a horse."

★ ★ ★

The experienced old copyreader couldn't believe the reporter's story on the theft of 2,025 pigs.

"That's a lot of pigs," he growled, and called the farmer to check the copy.

"Was it 2,025 pigs that were stolen?" he asked.

"Yeth," came the farmer's lispering reply.

"Thanks," said the copyreader and corrected the copy to "two sows and 25 pigs." —*Future*

★ ★ ★

"Worry is like a rocking chair; gives you something to do, but doesn't get you anywhere."

★ ★ ★

The true value of horse sense is shown by the fact that the horse was afraid of the automobile when the pedestrian still laughed at it.

★ ★ ★

Happiness is a perfume you cannot pour on others without getting a few drops on yourself. —*Ralph Waldo Emerson*

★ ★ ★

The day was rainy and the cellar leaked. Bertram, 5, was having a wonderful time sloshing around in the water when his mother caught him soaked to the skin. As punishment he was ordered to stay in his room until his pants were dry.

A short time later his mother heard a commotion in the basement. "Are you down there wetting your pants again?" she bellowed.

There was a long pause and then a deep masculine voice replied, "No Ma'am, I'm just read-

ing the meter." —*Holstein Friesian World*

★ ★ ★

Perhaps it is only coincidence, but man's best friend can't talk.

★ ★ ★

One farmer met another on the road and hailed him, "Hey, Jed! Got a mule with distemper. What'd ye give that'n o' yourn when he haid it?"

"Give 'im turpentine." informed Jed. "Giddap!"

A week later they met again and the first farmer shouted, "Say, Jed, I give my mule some turpentine like you said, and it killed 'im."

"Killed mine, too," confided Jed. "Giddap!"

—*Texas Farming and Citriculture*

★ ★ ★

Money doesn't grow on trees. You have to beat the bushes for it.

★ ★ ★

During the war a masterful English gentlewoman strolled into a barn where a young man was milking a cow. With a snort she asked, "How is it you are not at the front, young man?"

"Because, madam," answered the milker, "there ain't no milk at that end." —*The National Grange Monthly*

★ ★ ★

When a man called a veterinarian in a nearby town the operator asked, "Is this a personal call?"

"Of course not!" snapped the caller. "It's my dog that's sick."

★ ★ ★

An American couple on a tour of rural France had their baggage sent to a small inn ahead of them. When they arrived, they were cordially greeted by the manager, who assured them with the few English words he knew that he had made every arrangement for their comfort. He had even registered them, taking their names from their luggage: "Mr. and Mrs. Genuine Cowhide." —*Implement & Tractor*

Father was sitting in the armchair one evening, when his little son came in and showed him a new penknife, which he said he had found in the street.

"Are you sure it was lost?" inquired the father.

"Of course, it was lost! I saw the man looking for it!" replied the youngster. —*The Farmer*

★ ★ ★

A bishop, walking through a village one day, called at a country cottage for a glass of water. The old lady who brought it was awed and nervous. To put her at ease the bishop said: "This beautiful water. Where did you get it?"

The old lady replied: "From the Lord, my pump."

Contributions for this page are welcome. Send your "Fun On The Farm" story to Farmer's Digest, Fort Atkinson, Wisconsin.

Watch Out For "Photosensitization" This Summer

A combination of certain weeds and pastures plus bright sunshine can cause a lot of trouble . .

Condensed from Iowa Farm Bureau Spokesman

WITH summer just around the corner, with its strong sunlight, livestock producers should keep a look-out for a seasonal problem that can cause considerable economic loss in many herds and flocks.

The condition may look something like sunburn . . . but it isn't sunburn. Actually, it is brought on by a combination of two things. (1) Animals graze on certain types of weeds or pasturage which cause a chemical reaction in the system, making the animals very sensitive to sun. (2) The strong sunlight of summer strikes the "sensitized" animals with telling effect, causing a peculiar kind of sickness. The technical name of the condition is "photosensitization."

Livestock which have white or non-pigmented areas on their bodies are susceptible to this problem, according to the American Foundation for Animal Health. Owners should watch for signs of it on the ears, eyelids, nose, lips, face, and white body areas; also on the backs of newly-shorn sheep.

Outwardly, photosensitization may look at first like ordinary sunburn. The skin may look red or blistered. Later a watery substance which collects under the damaged skin may seep through, causing hair to become matted.

The sick animals are restless. They will shake their heads, scratch, or rub the sore areas against posts or buildings. The skin may be rubbed off and this can open the way for infection of the wounds.

In pigs, several peculiar signs occur. Hogs may walk as though it were painful to do so, or they may drop to the ground suddenly, with hind legs extended backward. Sometimes their ears will become thickened, and the eyelids may become swollen-together. In sheep, swellings often occur

Reprinted by permission from Iowa Farm Bureau Spokesman, Grundy Center, Iowa

around the head, giving the disease the commonly-used name of "bighead."

What kind of losses does photosensitization cause? Not heavy death losses, as a rule. But the economic loss to the owner can be considerable. The sick animals lose weight. They may be slow to recover. And even after recovery, it often takes quite a while for them to get back to gaining properly.

There seems to be no full and exact list of the plants and weeds which cause livestock to become sensitive to sunlight. However, here are a few of them, as listed by Foundation authorities:

St. John's wort, Klamath weed, young or blooming buckwheat, little leaf horseradish, alsike clover, bur clover, alfalfa, ladino clover, rape, vetch, spineless horsebush, coal oil brush, century plant, and in some areas, Bermuda grass.

What to do when livestock begin to show these signs of sun sickness? The first thing is to have a veterinarian check the sick animals, see what the trouble is, and adopt a course of treatment to get them back into condition as soon as possible. Along with this, protective steps should be taken to see what forage is causing the trouble, and what precautions can be taken.

Sick animals should be placed in darkened quarters or shady areas, because the more sun they get, the sicker they will get. Sometimes the offending plants can be eradicated. If the entire pasturage is involved, it may be necessary to graze the animals at night, and keep them sheltered while the sunlight is strong.

This condition can be a worse trouble maker than it appears to be. It doesn't show up as dramatically as some diseases. Therefore, the owner may not even notice it for a while, unless he is on the watch for it.

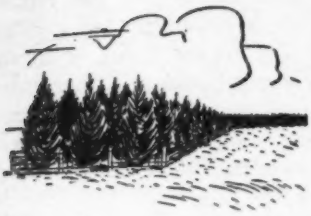
So, with summer here, it is a good idea to keep a weather eye out for anything that looks like "Sunburn" — and do something about it promptly if it shows up.

Consider The Bee

When you feel that being persistent is a difficult task, think of the bee. A red clover blossom contains less than 1/8 of a grain of sugar; 7,000 grains are required to make a pound of honey. A bee, flitting here and there for sweetness, must visit 56,000 clover heads for each pound of honey; and there are about 60 flower tubes to each clover head. When a bee performs that operation 60 times 56,000, or 3,360,000 times, it secures enough sweetness for only one pound of honey.

—*Sunshine Magazine*

Farm Woodlands: Producers of Timber and Wildlife



Managed woodlands can produce more timber, income and game than the neglected, abused kind . . .

Condensed from
Wisconsin Conservation Bulletin
Lewis E. Meyers, District Game Manager, Boscobel, Wisconsin

DO YOU have a patch of woodland on the farm? If so, put it to work — let this woodlot produce more money and enjoyment for you.

Proper management of that wooded forty or eighty will mean extra dollars now or in the future. It can mean hours of outdoor fun, too, as the numbers of wild birds and animals increase.

Getting a pocketfull of cash from your trees need not be a "one-shot" deal. With up-to-date management you can collect annually or periodically through selective logging and marketing of mature trees.

Besides cash on the stump you can receive dividends in the form of useful wildlife. We all know and appreciate the esthetic value in wild birds and animals and the situations in which they thrive. A healthy woodlot, well stocked with a variety of trees, shrubs, and wildlife is a thing of beauty and of real value too.

Although wildlife value to the farmer should be neither exaggerated or minimized, many species of birds and animals found in or frequently using the farm wood lot assist the farmer by helping to hold destructive insects and pests under control. These natural controls are often overlooked.

Since woodlots often represent the only permanent cover on the farm, the importance of improving them as producers of a timber and wildlife crop can readily be seen.

Such forms of wildlife as deer, squirrels, and ruffed grouse are primarily woodland creatures. Rabbits, quail, and in many areas pheasants locate along the edges of woodlots bordered by grasses, shrubs, and other vegetation.

Income from timber with wildlife to boot! Are you interested in a money-making and satisfying

Reprinted by permission from Wisconsin Conservation Bulletin, Box 450, Madison 1, Wisconsin

project like this? You can have both. Today's forester or game manager's calendar is filling up with appointments to help landowners and operators make more money from their woodlands while improving these areas for wildlife, and recreation from hunting too.

What's behind this upsurge in woods and wildlife management? First, additional game and forestry personnel are now well placed to assist landowners. Secondly, good land use practices have become accepted by the public in ever-increasing numbers. Much of this work has been assisted by the federal programs with cost-sharing features. Most farmers are either taking advantage of, or know of the agricultural conservation program, administered locally through your county ASC Office.

Under this program to encourage better land use, you the landowner or operator may now be receiving partial payment for liming or seeding, strip-cropping, or other practices. Did you know you can receive cost-sharing for certain woodland management practices or wildlife cover plantings in connection with your timber management?

You can, by signing up at your ASC Office for timber stand improvement, or for planting trees and shrubs for forestry or wildlife.

That livestock cause severe damage when permitted to range through woodland is well known. And such damage to tree reproduction is ordinarily far greater than any forage value obtained from wooded pasture. Other damages are to soil structure (compaction) and loss of leaf litter, both essential to prevent the rapid run-off of rain.

Knowing that wooded pasture makes neither good pasture or timber producing land, a compromise can often be worked out. Where there is a shortage of clear, open grazing land, it is frequently possible to clear some of the wooded land and establish good permanent pasture, but at the same time protecting the remaining woodlot.

Custom planting service, with machines, now is available in most areas. Shrub borders along woodlots, which improve conditions for wildlife as much as any other practice, are quickly and easily planted on level to gently rolling land with these machines. And custom planting is low to moderate in cost. Cost-sharing will help pay the expense of this

About 49 per cent of meat consumed in the world (excluding Communist China) is beef and veal, 42 per cent is pork and 8.5 per cent lamb, mutton and goat. Less than one-half per cent is horse meat.

planting work, either hand planting or machine planting.

In some areas, farmers can arrange to use the county or other locally-owned planter. Contact your district forester or the county agent.

Woodlot management means encouraging those species native to your particular area. Generally, climate, soils, and topography rule out other species. But where the stocking or density of native trees is thin, the planting of pines or other conifers is often helpful. They offer excellent cover for wildlife. And some of these trees may be a means of additional income to the landowner as thinning becomes necessary.

Many of these plantings are in the form of windbreaks adjacent to the woodlot, or in groupings of various shapes and sizes. They have greatly increased value for wildlife if placed near cropfields which offer a source of winter food.

During 1960, more than $70 million worth of U. S. surplus commodities acquired, under price-support and surplus-removal programs, went to feed children in schools throughout the country.

If your woodlot and wildlife management plans call for tree and shrub planting, this work is done in the spring. Many landowners or operators are able to get their planting completed before starting with field work, or following small grain planting, depending on the weather. Much other woodlot and wildlife management work is done during the winter months, normally not such busy times.

Woodlot management means more than protecting the area from fire and grazing and planting trees. It means removing trees that have reached maturity. These trees are either failing to put on an additional growth of new wood or are starting to deteriorate after maturity. It also means removing or killing weed, defective, or deformed trees to encourage the more valuable timber producers.

But we have some important wildlife considerations too in our timber improvement program. For example, some of these defective trees may be valuable den trees for squirrel and raccoon. And some may have cavities used by such tree nesting species of birds as the wood duck. These defective trees can be killed by girdling, and left standing, thus maintaining homes for wildlife for many years.

With these larger deformed or weed trees no longer competing for moisture, sunlight, and nutrients, rapid gains will accrue to the young, potential timber trees.

And important habitat requirements for birds and animals will be kept intact.

With more favorable light conditions near the edges of woodlots, there is a greater variety and density of trees, shrubs, and other cover. It is in this "edge" area that the greatest numbers and kinds of wildlife are also found.

With this in mind you'll find that making brush piles near and within the area of "edge" out of the limbs and slashing from logging and other work will do much to increase rabbit numbers.

Such brush piles can be 10 feet in diameter and 6 feet high. When constructed over a stump or log they will not settle so quickly. And their value will be lasting as escape cover for wildlife, especially rabbits and bobwhite quail.

Partly Clogged Vacuum Lines Often Cause Milker Troubles

Partially clogged vacuum lines are the cause of many milking machine troubles.

Dairy specialists say vacuum lines become clogged with contamination from many sources—bedding, scale, milk, and dust from feed, bedding, and lime. These things are sucked into the lines during the normal routine of milking.

The following steps will help prevent this contamination and keep the milking machine operating more efficiently:

1. Do not raise dust in the barn by feeding or sweeping before or during operation of the vacuum pump.
2. Be careful of leaky inflations.
3. Do not fill milking machine pails more than two-thirds full.
4. Prevent the milking machine from being tipped over.
5. Put relief valves at the end of the line to prevent rust and scale due to condensation.
6. Do not suck milky rinse water into the line.
7. Use only clean, sound milking machine rubber parts.
8. Be sure the belt is tight enough to operate the pump efficiently.

Milker service men usually carry an accurate vacuum gauge tester and it's a good idea to have the gauge checked occasionally.

The specialists also recommend that vacuum lines be cleaned at least three or four times a year in addition to any time that milk is sucked into the line. *—University of Missouri*

Chimney Smoke

by Irene Rudie

Today I saw an act of faith;
A man was on his knees,
Not in a pew, but by a fence
Planting apple trees.

—*Sudie Stuart Hager*

★ ★ ★

It doesn't take long for the family to get rid of the big box of candy they bought for Mom on Mother's Day.

★ ★ ★

You can plant giant sunflowers in your garden for seed to attract birds to your outdoor feeder next winter, or just to fascinate the small children of the family. If there's enough moisture on the spot, plant a few scarlet runner beans to climb the sturdy stalks for added interest and good eating.

★ ★ ★

There's no such thing as dull routine on the farm; housework can be interrupted anytime by calls for help from the men. Today, just as I began hanging up the wash, I had to stop and load the car with shovel, jack, and planks and drive to the farthest field to help get out a tractor stuck in the mud. While the head of the house made use of the tools I brought, I walked among the damp brown maples leaves in the nearby woods and found the first delicate pink and blue hepaticas, our May flowers.

★ ★ ★

We want to know what to do about cutworms in the garden but the county agent sends out material giving instructions for so many pounds and so many gallons per acre. What we want is how many teaspoons in how many cups for our few cabbage plants.

★ ★ ★

A recital of physical ailments is not considered interesting conversation but, of course, that means the other fellow's ailments, not mine.

★ ★ ★

Fresh young dandelion leaves mixed with diced, browned bacon and vinegar is a stand-by spring salad in our house, sometimes varied with hard-boiled eggs and, or, onion. Young lambsquarter cooked for greens are every bit as good as spinach, and much earlier.

How Feeds Supply Hog Needs

Does your hog feed have everything it needs? This article may answer this question for you . . .

Condensed from Wallaces Farmer

WHY FEED your pigs a balanced ration?

You must, if you expect to get top gains, have good feed efficiency, and maintain animal health.

"Feeding trials point out the benefits from feeding a balanced ration," says Virgil Hays, Iowa State University swine nutritionist. "Pigs just won't do as well if they don't get the nutrients they need."

On a ration of just corn and mineral, a group of growing and finishing pigs requires 12 bushels of corn per 100 pounds of gain. With tankage added, the pigs will need only 6½ bushels of corn (plus 40 pounds of tankage) per 100 pounds of gain.

Even this is not good enough today. For top profits, typical rations require more detailed balancing.

Growing and finishing hogs, on a ration of corn, plus a 35-percent protein and mineral supplement require only 5 bushels of corn per 100 pounds of gain. (The hogs will need 50 pounds of supplement per 100 pounds of gain.)

Listed in the chart at the end of this article are 22 essential nutrients. These are the ones that feeds often don't contain in sufficient quantities. So they must be added to the ration thru supplements. The first group of nutrients listed in the chart—amino acids—are building blocks of protein. And protein is used to produce lean meat.

Actually, 22 amino acids are present in the lean meat of pork. However, all but the 10 listed in the chart can be manufactured by the pig's system from nutrients supplied in feed.

It's the balance of amino acids that counts. If any one of the 10 essential amino acids is lacking, growth rate is slower. This is true even tho there may be enough other amino acids present in the ration to show a high total protein content.

Vitamins, too, must be supplied in proper balance. They play a

Reprinted by permission from Wallaces Farmer, 1912 Grand Avenue, Des Moines 5, Iowa

big part in body-regulating enzyme systems.

For example, the vitamin, riboflavin, is very important in enzyme systems that control the use of protein.

Minerals also help the body regulators. In addition, they supply the substances for building bones and making the blood function properly.

Last on the list is energy. In most swine rations, energy comes from corn or oats. Starches in these feeds supply fuel to keep the pig warm, run the other body processes, and put on fat.

Looking at the chart it's easy to see that a ration of corn or oats fed alone, even with a vitamin-mineral premix, lacks the essential amino acids to give top pig performance.

Adding ingredients like soybean meal or meat scraps is necessary.

Not all deserts are hot and dry. Antartica, larger than the U. S. in area, is classed as a cold desert—many parts of it receiving less moisture per year than Sahara.

Either soybean meal or meat scraps alone can do a relatively good job of supplementing a corn and vitamin-mineral premix ration.

However, a blend of both is probably the most desirable. That's because each alone doesn't fully balance the amino acid deficiencies of corn.

For instance, a ration of corn, soybean meal, and a vitamin-mineral premix may be deficient in methionine. While a ration of corn, meat scraps, and a vitamin-mineral premix could be deficient in tryptophan.

What about the vitamin-mineral premix? It's absolutely essential. Without the premix, you can get into trouble. Skin diseases as well as internal disorders are often a result of vitamin or mineral deficiency.

The trace mineral, zinc, is a good example. Rations deficient in zinc can cause parakeratosis, a skin disease.

Also, lack of calcium, phosphorus, or vitamin D can cause soft bones. A lack of vitamin B-12 can slow growth.

In addition to the feeds listed in the chart, there are others that can be used for balancing rations.

One is alfalfa meal. It's a good supplier of vitamin A and is widely used in rations for sows.

Milk by-products, such as skimmilk and whey, are also widely used in baby pig rations. These supply a readily digestible source of energy and nutrients. And they also add flavor to the ration.

Sucrose (sugar) is used in baby pig rations, too. This sugar, used for flavoring, adds little else, except a bit of energy, to the ration.

Besides the nutrients, other

compounds are used in rations to stimulate growth—antibiotics, arsenicals, and nitrofurans. They speed growth by keeping down harmful germs — particularly those in the intestinal track.

So, when you're picking a ration for pigs, make sure you're getting the proper balance of nutrients to give top performance.

If you make your own ration follow recommended formulas. Otherwise, feed or mix a commercially-prepared supplement according to directions.

	Complete balanced ration	Corn	Oats	Soybean meal	Meat scraps	Vitamin mineral premix
Amino acids						
Arginine	yes	yes	yes	yes	yes	no
Histidine	yes	no	no	yes	yes	no
Isoleucine	yes	no	no	yes	yes	no
Leucine	yes	yes	yes	yes	yes	no
Lysine	yes	no	no	yes	yes	no
Methionine	yes	no	no	yes	yes	no
Phenylalanine	yes	yes	yes	yes	yes	no
Threonine	yes	no	no	yes	yes	no
Tryptophan	yes	no	yes	yes	yes	no
Valine	yes	no	yes	yes	yes	no
Vitamins						
A	yes	yes	no	no	no	yes
D	yes	no	no	no	no	yes
Choline	yes	no	yes	yes	yes	yes
Niacin	yes	yes	no	yes	yes	yes
Pantothenic acid	yes	no	yes	yes	no	yes
Riboflavin	yes	no	no	no	yes	yes
B-12	yes	no	no	no	yes	yes
Minerals						
Calcium	yes	no	no	no	yes	yes
Phosphorus	yes	no	no	yes	yes	yes
Potash	yes	yes	yes	yes	yes	yes
Trace minerals	yes	no	no	no	no	yes
ENERGY	yes	yes	yes	no	no	no

Above: This Chart shows how well each feed would supply a pig's needs if it was fed separately. "Yes" means the feed is adequate in the nutrient. "No" means the feed lacks enough of the nutrient to give top performance.

Turkey growers intend to produce 20 percent more turkeys in 1961 than last year, the Crop Reporting Board announced. They plan increases of 22 percent in heavy breeds and 5 percent in light breeds, with heavy whites up 34 percent, and other heavy breeds up 17 percent. If growers carry out their intentions, about 99 million turkeys will be raised, compared with 82.3 million in 1960.

Red Clover – The Old Reliable

"There are good reasons for red clover's continued and extensive use." This article tells what the reasons are.

Condensed from Soil Conservation

E. A. Hollowell, Agricultural Research Service, U.S.D.A.

RED CLOVER, the legume of many uses for many places, is still one of the best.

After more than 250 years of use, it holds a firm position in good farming in the humid northern sections of the U. S. for hay, pasture, silage, and soil improvement. In the South and West its use is increasing. Its prestige has been enhanced by recent improved varieties.

There are good reasons for red clover's continued and extensive use. Pasture-renovation tests and farm experiences have shown that under cool humid conditions it surpasses all other legumes in the rapid, consistent establishment of good productive stands under wide extremes of soil conditions and fertilizer treatments. It develops good stands when seeded with different companion crops and in mixtures with other legumes.

Red clover has some deficiencies. The most serious is its failure to withstand long summer droughts and its tendency to succomb to repeated periods of freezing and thawing during early spring.

Red clover is a perennial plant that may behave as a winter annual or a biennial. Diseases, insect pests, unfavorable weather, and improper management, alone or in combination, may lead to its premature death. New varieties resistant to diseases and insect pests and tolerant to unfavorable weather, should reduce farm losses. However, new varieties will not make satisfactory crops without proper nutrition, management, and culture. All these requirements must be met to obtain the potential value of red clover.

It is surprising how red clover will respond to good treatment.

Reprinted from
Soil Conservation, Soil Conservation Service, U. S. Department of Agriculture, Washington D. C.

While it will grow in slightly acid to medium acid soils, it benefits from the use of limestone. Phosphate and potash are two important fertilizers that red clover must have to make good growth. Fertilizers having ratios of 0-1-2 and 0-1-3 are giving greater red clover yields on many soils where, in the past, an 0-1-1 mixture was thought to be adequate. An increase in the rate of fertilizer often results in greater yields.

Fertilizer residuals from application on winter wheat in the fall, may not be enough for good growth of spring-seeded red clover on the same field. Many farmers apply additional fertilizer, especially phosphate and potash, in late winter or early spring.

Another extremely important factor in getting good, persistent stands is date of seeding. Seedings made in late February or the first 2 weeks in March have given far better stands that persist during hot, dry periods of the summer than later seedlings.

The summer of 1957 was the driest on record for the Eastern Shore of Maryland. Much of the corn failed to produce more than small nubbins. A stand of Chesapeake red clover seeded in late February on winter wheat survived the summer drought even with the competition of a 30-bushels-per-acre wheat crop. While the Chesapeake variety may have some drought-resistant characteristics, the early establishment of the stand and good growth during the cool months of spring favored plant survival during the long, hot dry summer.

Basic research on the effect of different temperatures on growth and survival of red clover has shown that high temperatures favor the depletion of root reserves, leading to seedling starvation. Date-of-seeding tests have also shown the value of early seeding in getting and maintaining good stands.

In the deep South more red clover is being used every year. There, it behaves as a winter annual. It is planted from October 15 to December 1, the date depending on location. If red clover is planted in a perennial grass turf, the grass should be closely grazed or clipped and fertilized. Many farmers are effectively using sod seeders which open up the turf, a condition that favors the seedling establishment.

Speaking of money . . . it's the job of the U. S. mint to make it first and ours to make it last.

In the deep South red clover will produce an abundance of grazing and can be used for hay or silage before the stand dies

during the middle of the summer. It should not be grazed as closely as whiteclover or Persian clover. Rotation grazing is more desirable than continuous grazing. If one of the southern varieties, such as Nolin or Port Gibson, is used, and if it is allowed to set seed, a good volunteer stand can be obtained.

While red clover has been widely used in the Rocky intermountain region under irrigation, particularly for seed production, its potential for forage has not been realized because irrigation has been improper. The same situation exists in the area along the Pacific Coast. Irrigation practices for alfalfa have generally been followed. For yields ranging from 5 to 7 tons per acre, red clover requires more frequent irrigation with a smaller quantity of water. However, the total water requirement of red clover is about the same as that of alfalfa.

Diseases play an important role in yields, in stand persistency, and in hay quality. All parts of the plant are subject to diseases. Diseases fluctuate in occurrence and intensity with weather conditions that affect the development of the disease-producing organisms and with the susceptibility of the host.

The fact that red clover has been a major legume for such a long time attests its virtues in spite of its susceptibility to disease and insects. Breeding for disease resistance is the best method of control. Basic research on the organisms causing diseases is essential before a good job of breeding for disease resistance is possible. After the organism has been studied, the next step is the development of screening procedures by which literally thousands of plants are subjected to inoculation under conditions favorable to development of the disease or diseases. The plants that show some resistance are selected and intercrossed, and their progeny inoculated in turn. It is generally necessary to repeat this procedure for many generations before a high degree of resistance is obtained while other desired characteristics are maintained. The Kenland variety has high resistance to southern anthracnose, while Dollard is highly resistant to northern anthracnose. Two new experimental varieties, as yet unnamed, are highly resistant to powdery mildew, and one of them is resistant to northern anthracnose. Resistance to other diseases

Guano fertilizer is classed as the most efficient and complete fertilizer in the world—because it is derived from a fish diet, which in turn draw their food from mineral-rich sea water.

is being studied as rapidly as facilities permit.

There are two particularly destructive insects that shorten the life of red clover. These are the red clover root borer and the clover root curculio. There are no varieties resistant to either of these insects, which take their toll unless controlled by the use of insecticides.

Pennscott, Dollard, Kenland, Chesapeake, Nolin, and Port Gibson, are red clover varieties that have been widely tested by State agricultural experiment stations. One or more of these have been found to be best adapted to specific States or parts of States and are being recommended over common red clover.

For better red clover: (1) use the variety recommended by your State agricultural experiment station; (2) follow the recommended liming and fertilization practices; (3) in the North seed early in the spring, and in the lower South seed in the fall; (4) clip and remove grain stubble and weeds during the summer; and, (5) treat stands with insecticides to control insects. Good red clover responds to good treatment.

Tests Show Castrating Lambs Pays

Sheepmen who claim it pays to castrate and dock lambs now have some more scientific facts to bolster their arguments.

A one-year test conducted by the Virginia Agricultural Experiment Station showed that castrating does produce a more salable product. Although docking had no significant effect on the rate of gain, slaughter grade, or carcass grade, the docked lambs gave a slightly higher dressing percentage—50.9 percent compared to 50.6 percent for lambs that were not docked.

The test also showed that ram lambs gain faster than either ewes or wethers in cool weather. Ram lambs outgained wethers by .02 pounds per day and ewes by 0.5 pounds per day when they were weighed on May 26. As the weather gets warmer, the ewes gain faster. When weights were recorded on June 23, ewes had gained .05 pound per day more than rams and .01 pound more than wethers.

Slaughter grade for ewes was "prime." Rams and wethers graded "choice." Carcass grade was "choice" for ewes and wethers, and "good" for rams. Dressing percentage was 51.6 percent for ewes, 50.1 percent for wethers, and 49.7 percent for rams. The difference of almost ½ percent in yield of wethers over rams would be considerable economic importance to a packer slaughtering a large number of lambs, the scientists say. —*Virginia Polytechnic Institute*

Pasture For Young Dairy Calves ?

Using methods described here, young calves were able to make satisfactory growth on pasture in Purdue experiments . . .

Condensed from Guernsey Breeders' Journal
M. C. Stillions, Rutgers University, and
G. H. Noller, B. W. Crowl, N. S. Lundquist
and *A. L. Delez,* Purdue University

THE newborn calf is essentially a single stomach animal and as such is dependent on whole milk or milk products for most of its nutrient requirements. Within a short time — the exact time unknown — the rumen begins to function and a calf is able to make increasing use of forages.

Placing calves on pasture at an early age is common practice in England and New Zealand, whereas in the United States it has not been recommended until calves become five to six months of age. This recommendation appears to be based on information obtained from dairy farmers who were unsuccessful in starting calves on pasture. This may have been due to either poor feeding practices or an inferior quality pasture.

Parasites

The susceptibility of young calves to parasite infestation is sometimes given as the reason for not placing calves on pasture at an early age. However, observations have shown that if calves have access to high-quality forage, parasites are unlikely to be a problem. In fact, in one instance where infestation was above the values considered to be harmful for older animals, the growth rate of the calves was not depressed. Some of the calves with the higher fecal egg-counts grew more rapidly than those with lower egg-counts.

It has been shown that calves raised in portable pens on pasture contained less parasitic infestation than calves raised indoors and parasites appeared earlier in the barn-raised calves than in the pasture calves. This has similarly been shown in New Zealand with calves raised on dry lot as compared to calves on pasture. The dry lot calves had to be drenched,

Reprinted by permission from Guernsey Breeders' Journal, Petersborough, New Hampshire

whereas the pasture calves did not.

This is an indication that pasture is a high plane of nutrition which enables calves to overcome the effects of infestation. This is especially so if there is a plentiful supply of good quality pasture.

Pasture Utilization and Digestibility

Data has been presented that calves three to nine weeks of age can digest approximately 74 per cent of the dry matter and 80 per cent of the crude fiber in young pasture grass. This is comparable to digestion by mature cows. Calves have been placed on pasture as soon as possible after birth and weaned to pasture alone at 56 days of age. These calves made body weight gains comparable and in some cases better than calves raised indoors receiving more milk and grain. Experiments using non-identical twins, one calf from each pair raised on pasture and the other indoors, showed that pasture calves gained an average of three pounds more per week than calves raised indoors. The calves were placed on pasture at seven days of age and they began consuming forage readily.

Experiment I — Methods

This experiment was conducted at Purdue University, Lafayette, Indiana. Pasture-fed calves were compared to barn-fed calves. The barn-fed group was housed in a permanent pole-type building and the pasture calves were provided with a pole-type shed covered with polyethylene plastic.

As the calves became available they were assigned at random to one of three groups: (1) open barn, (2) alfalfa-ladino-brome pasture, (3) alfalfa-ladino-brome pasture, plus hay free choice. The pasture area was divided into plots and the calves were rotationally grazed.

To feed a population of 230 million (as predicted for 1975), farmers and ranchers must produce: 16.3 billion pounds more red meat; 47 billion pounds more milk; 20.7 million tons more fruits and vegetables; 20 billion more eggs.

All calves got colostrum from their dams for two days before going on experiment, then they were put on the feeding schedule shown in Table 1 below. The calves were fed milk twice daily in equal proportions and given access to grain individually three times daily. Also, water was given free choice.

Grain feeding was started when calves were eight days of age and was limited to a maximum of three pounds daily during the milk feeding period and then in-

TABLE 1
DAILY FEEDING SCHEDULE

Age	Whole milk	Grain*	Hay
(days)	lb.		
0-2	On Cow	—	—
3-7	6	—	—
8-28	8	3	Free Choice**
29-35	6	3	Free Choice
36-42	4	3	Free Choice
43-49	2	3	Free Choice
50-60	—/	4	Free Choice
61-116	—	2 ***	Free Choice

* Indicates maximum allowed daily.

** Hay feeding began at 15 days of age for barn group 1 and when placed on pasture for group 3. No hay was fed to calves in group 2.

*** The barn group was continued on a maximum of four pounds of grain daily to 90 days of age, then reduced to two pounds daily.

creased to a maximum of four pounds to 60 days of age. From 61 to 116 days of age, grain feeding for the pasture group was limited to two pounds daily. The grain mix averaged 15 per cent protein and was made up of ground corn, ground oats, soybean oil meal, steamed bone meal, and iodized salt.

The calves were closely watched for health and fecal samples taken for parasitic population. The calves were on experiment 116 days and data collected regularly for feed consumption and weight gains.

Results and Discussion

To 60 Days of Age

The average whole milk consumption was 244.9 lbs. for the three groups. The whole milk feeding system was designed to supply a larger proportion during the so-called critical period, which ends at approximately 30 days of age.

Each group was allowed the same amount of grain, but the pasture group 2, consumed an average of 21.1 pounds less grain than the barn-fed group 1, and the pasture-hay-group 3, averaged 27.7 pounds less grain than the barn calves. However, there was considerable variation in the average grain intake of the calves in groups 2 and 3. This varied from 16 to 74 pounds, which indicates that some calves can obtain more nutrients from pasture than others. Although the pasture groups did consume less grain they made consistently better weight gains than the barn-fed calves. The average daily gain was .97, 1.14

and 1.10 pounds for groups 1, 2 and 3, respectively.

The extra consumption for the barn group was due to allowing a maximum of four pounds to 90 day of age. During this same period, the calves in the pasture-hay group consumed an average of 20.5 pounds of hay compared to 256.2 pounds for the barn-fed calves. The increased hay consumption by the pasture-hay groups may have been due to the lower availability of pasture.

At the conclusion of the experiment, the general appearance of the pasture-hay groups was superior to that of the other two groups. A second experiment was conducted on the same pasture with very similar results.

Summary

Under the conditions of this investigation, young calves were able to make satisfactory growth on pasture, and pasture substituted, in part, for grain and hay. The feeding of good hay is recommended and appears to be beneficial to calves on pasture by reducing its laxative effect.

Raising vs. Buying Dairy Calves To Improve Your Herd

Whether to buy or raise dairy herd replacements is a problem that each dairyman should solve for himself, according to J. G. Cash, University of Illinois extension dairyman.

If you have plenty of feed, labor and housing, you can raise replacements as cheaply as you can buy them. But costs of raising dairy herd replacements will vary with each situation and with different levels of management.

If your dairy operation is intensive, you may want someone else to raise heifers from your top cows on contract. Either raising your own replacements or having them raised on contract is usually better than buying them. Cash lists four reasons why this is true:

1. Disease is less likely to enter your herd.
2. You can select the sire and dam.
3. You have more opportunity to grow out heifers.
4. You can breed heifers to fit your herd and the markets.

If your main interest is breeding cattle and improving your herd, raising your own replacements may be best for you, Cash concludes.

—Illinois Agricultural Extension Service

The Old-Time Ring Toter

This man once rode the West to build his herd by methods that weren't quite legal . . .

Condensed from The Cattleman

Bill Leftwich

KNOW what a "ring toter" was? This old practice may teach us a lesson even in our present day.

The old time "ring toter" was a westerner who rode the practice of "Mavericking" just a little heavy.

He didn't actually rustle branded cattle but he did indicate ownership on stock that hadn't previously belonged to him.

Around the turn of the century, cattlemen referred to a man who was getting a herd together in this fashion as a "long rope" or "ring toter." With a little branding experience behind him a man could run any brand he wanted to with a hot cinch ring held by two sticks.

On the southern and high plains where wood was scarce, a cow chip fire served to heat the ring. If a "toter" carried the ring in one pocket very long, a worn silhouette would begin to show; so he had to shift them around from time to time. Some would tie the ring on the left side of the saddle as much out of sight as they could get it.

Practice Frowned Upon

The practice of branding calves that were traveling with their mammies who were carrying a definite brand was frowned upon by most ranchers to the point that they would more than likely shoot you if they caught you in the act. The modern rustler couldn't face up to a bunch of ranchers and stray men at a roundup and run his bluff on claiming a certain line-backed yearling with his brand, even if the animal had been seen with a line-backed cow carrying a different brand, as the old "ring toter" often had to do. With fast trucks and good highways, the modern cow thief just carts 'em off a long ways and sells them as his own.

Reprinted by permission from The Cattleman, 410 East Weatherford St., Fort Worth 2, Texas

Branding Absolutely Necessary

By tightening up our interstate shipping regulations and with more uniform inspection of brands, much of this "highway rustling" can be eliminated; but the weak link in the whole chain is the cattleman who fails to brand any new stock at the first opportunity. The whole brand inspection set-up can work like a charm until someone reports the loss of some unbranded stock.

Tear down part of the corral if necessary, but build that fire and heat those irons and put your trademark on all those unbranded ones. They may still get stolen but your chances of getting them back are a hundred per cent better when they have that brand on 'em.

Can You "Burn Out" Your Dairy Cattle

Can you "burn out" a dairy cow?

Borden Ells, extension dairyman at New Mexico State University, says there are some points of disagreement between scientists and practical dairymen when this question is asked. They are both partly right — and partly wrong.

When a dairyman talks about a burned-out cow, he means an animal that freshened, produced a great deal of milk, and then within a few months began going downhill. He knows a burned-out dairy cow is skin and bones, and explains this unhappy state of affairs by saying the cow was working so hard she just "burned out."

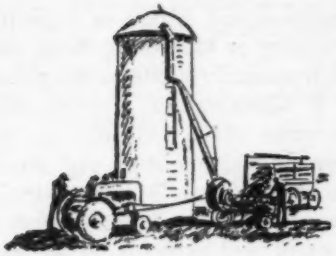
In general, the scientist doesn't talk about these cows at all. He talks in terms of breeding and nutrition. He says you cannot burn out a cow by feeding her too much feed; feeding will not cause a cow to produce more milk than she has the inherited ability to produce. He says the right way to feed a cow is to feed her so she can produce all the milk she was bred to produce.

Dairymen generally believe that feeding grain above a certain level will harm the cow and cause damage to the udder. The scientists say if you give a cow more grain than she needs she will just cut down on the amount of hay, silage, or pasture. So the net result of over-feeding grain, according to Ells, is that the cow will adjust her intake so the total amount will not exceed some amount determined by the cow.

The specialist draws an analogy between cows and — yes — fires. Why do fires burn out? Because they run out of fuel, the specialist says. And the same reasoning, he contends, can be applied to a cow.

—New Mexico State University

How Good Is Your Silage?



Which do you make? — Good quality silage with high grain content or moldy, caked, low quality silage with little feed value . . .

Condensed from Tennessee Farmer
Dayton Matlick

"HOW good is my silage?" This is a question that many farmers can't answer.

he main reason behind the lack of ability to judge silage correctly is lack of experience. Farmers don't sell silage on the open market in competition with other farmers so they don't see how their product stacks up with that of their neighbors.

Quality Forage Makes Difference

A silo is not a "horn of plenty" from which automatically flows high quality forage. As the old saying goes, "you can only get out what you put in." The quality of silage taken from a silo can never be better than that put in.

If you use a good quality forage material as a base, you don't necessarily get good silage. Many factors effect the quality of the silage before it gets to your cows. Joe Burns, agronomist with the University of Tennessee Extension Service, has come up with two charts with which you will be able to evaluate your own silage and see how it rates in comparison with set standards.

State of growth in grass silage, which includes both legumes and grasses and combinations of both, and grain content in corn silage have a big effect on crop quality. High leaf content in grass silage usually indicates high feed value, while a high grain content in corn silage naturally means better feed value.

The best corn silage has a high grain content, a natural green to olive green color, and a clean, pleasant odor. The best grass silage is cut early and has a high leaf content. It is light to dark green in color depending on the crop and/or additive. Red clover may have a darker color. It also has a clean, pleasant odor.

Listed below are some of the difficulties which may be encountered that would decrease the

Reprinted by permission from Tennessee Farmer, 1529 Demonbreun, Nashville, Tennessee

value of your silage and the causes.

● A deep brown or black color or predominantly white or gray in both corn and grass silage are a result of poor packing and/or cutting the silage below the recommended moisture levels (65 to 70 per cent).

● A yellowish green or bleached color in grass silage is due to high moisture (80 to 85 per cent) and poor distribution of preservatives within the silage. A yellowish green color in corn silage often indicates frosting.

● Odors are a good method of judging silage, too. In both grass and corn silage a yeasty, musty, fruity odor indicates slightly improper fermentation due to the silage being cut a little too dry and not being well packed. A sharply acid odor is from high moisture and is due to improper covering or lack of covering and high moisture content at cutting.

● Sliminess and a rotten odor in grass silage indicates an extremely high moisture and use of no preservatives. A rotten odor in corn silage is due to high moisture content and exposure to air. Extremely rank corn silage with an acid odor is due to cutting before or immediately after tasseling with a high moisture content.

How to Score Your Silage

In judging your own silage, fill in the blanks with numbers in the range indicated in the "possible score" column and then total. Scoring runs: 90 and above, Excellent; 80-89, Good; 65-79, Fair; and below 65, Poor silage.

Top quality silage will pay for itself many times over in higher milk production, or more pounds of gain.

SCORE YOUR CORN SILAGE

	Possible Point Scores	Your Score
GRAIN CONTENT:		
A. High	46-50	
B. Medium	36-45	
C. Low	26-25	
D. None	25	
COLOR:		
A. Desirable—natural green to olive green	21-25	
B. Acceptable—yellowish green to slight brown or light yellow	11-20	
C. Undesirable—deep brown or black, or predominately white or gray	0-10	
ODOR:		
A. Desirable—clean, pleasant odor	21-25	
B. Acceptable—yeasty, musty, fruity, slightly burnt, or quite sharply acid odors	11-20	
C. Undesirable—strong burnt, putrid, extremely rank, or very musty odors	0-10	
YOUR TOTAL SILAGE SCORE	100	

SCORE YOUR GRASS SILAGE*

	Possible Point Scores	Your Score
STAGE OF GROWTH:		
A. Before blossom or early heading	36-40	
B. Early blossom	31-35	
C. Mid-to-late bloom	21-30	
D. Seed stage (stemmy)	15-20	
COLOR:		
A. Desirable—light to dark green depending on crop and/or additive used	21-30	
B. Acceptable—yellowish Green	11-20	
C. Undesirable—brown or black, or predominantly white or gray	0-10	
ODOR:		
A. Desirable—clean, pleasant odor	21-30	
B. Acceptable—yeasty, musty, or fruity odor	11-20	
C. Undesirable—burnt, or sliminess and a putrid odor	0-10	
YOUR TOTAL SILAGE SCORE	100	

*Grass Silage (includes both legumes and grasses, and combinations of these).

Five Goals For Hog Growing Profits

1. Wean 8½ to 9 pigs per litter. Farrow 10 .

2. Have pigs weigh 35 to 40 pounds at eight weeks and average 300 pounds or more per litter at weaning.

3. Market all pigs at six months of age or less when they weigh 200 to 225 pounds.

4. Produce 100 pounds of pork with 400 pounds of feed, including feed fed to breeding stock.

5. To cover total costs of hog production, including operator's labor and interest on all money invested in the enterprise, farm records show that the hogs must show a return of at least $145 for every $100 worth of feed fed. *—University of Illinois*

Get Hybrid Corn Seed From Grower, Not Crib

Corn growers are warned against using second generation hybrid corn seed from the crib. Growers who plant second generation seed may suffer better than a 20 percent reduction in yield, according to an agronomist. He says this is very poor economy, losing 20 percent of a yield merely by trying to save about $1.00 per acre by using old seed. *—University of Florida*

How To Tell When A New Idea Will Pay

Ever wonder how much you can really afford to pay for a new tractor? Whether 25 cows would pay for a new milking parlor? Whether a new automatic feeding set-up would be worth the cost? This handy profit tester may tell you . . .

Condensed from Farm Journal

B. G. Perkins, Doane Agricultural Service

THE key to making money in the future is high output per man. And this is tied closely to mechanical "tools"—machines or buildings that let you handle more land or livestock, bring in extra money, replace hired labor, or free your own time for better management. But how can you tell whether a machine or building will make money?

We wrestled with this for a long time. Now we've come up with a simple, profit-testing formula that gives the answer on almost any building or piece of equipment you want to buy. Anybody who can do elementary arithmetic can use it. Here it is:

Dollar value of a tool equals "Dollars worth of labor saved per year" — divided by or over — "Yearly expense of owning the tool (as % of investment in tool.)

Here's how it works—first, when the tool saves hired labor, and in a later example when you have your own labor:

Let's say that you can put up a new building with a gravity-feed set-up for cattle and hogs that will let you get along without your hired hand. The man's wages cost you $200 a month, or $2,400 a year. That $2,400 is the dollars worth of labor saved per year for the top of the formula.

At the bottom of the formula, put the yearly expense of owning the tool, expressed as a percent of the investment in the tool. You can use the standard table of yearly costs at the end of this article, or you can use your own figures. The figures in the table are what we've found to be average.

For the building in our example, we enter the yearly expense as 14%. So the value of the building and feeding set-up is $2,400 divided by .14, or $17,143. That's what you can afford to

Reprinted by permission from Farm Journal, Philadelphia 5, Pennsylvania

pay and break even. Build for $10,000 and you'll make some money!

Let's figure what a tractor is worth. The yearly operating cost is greater than for a building, and the tractor won't last as long. So the depreciation is higher. The yearly cost taken from the table at the end of this article is 27%.

Suppose you could, by owning this larger tractor, save the expense of an extra man for the year. Put the yearly wage, $2,400, at the top of the formula: $2,400 divided by .27 is $8,889. That's what you can afford to pay for the tractor and break even.

Lloyd and John Mc Elhiney, Bureau County, Ill., took on an additional 400 acres of corn ground. They had the choice of hiring an extra man at $3,000 a year or buying larger equipment. The formula told them this: $3,000 divided by .27 is $11,111, which is what they could afford to pay for equipment.

So they traded off some old equipment for a five-bottom diesel tractor and a self-propelled combine-picker. They also placed extra value on being able to keep the machines going, in contrast to the doubtful dependability of a hired man.

You don't always have a full man's time with a machine or building—maybe you save only an hour or two a day. And maybe it's your own time. But your own time—management time—is the most valuable of all.

So to find out what you can afford to pay for this kind of labor-saving, figure an hourly rate of pay on it and put the dollars saved at the top of the formula. If a small machine or portable building is involved, divide by the yearly cost of .22 from the table.

For example, on my own farm, our portable crib feeders handle corn from pickers to hogs in just one step. This saves us 2 hours of labor a day for 6 months—or 360 hours a year. We figure the time is worth $2 an hour, perhaps more during the busy crop season.

So the portable feeders are worth $720 divided by .22, or $3,273. The cribs actually cost around $2,000.

"Tools" often bring in extra income. For instance, a milking parlor, or a new farrowing house, or an automatic feeding set-up might allow you to expand the number of livestock you can handle. Or bigger equipment may let you handle more land or get work done on time (as with harvest equipment)—which increases your net.

It is better to light a candle than to curse the darkness.

What you do then is estimate the increase in net income and put that figure at the top of the formula.

Let's say that you want to know whether it would pay you to put up a building and facilities that would let you handle 100 steers a year. If you've had experience feeding cattle, you know about how much you can clear per steer. Otherwise, your county agent or the farm management department at the state college can tell you the average. Let's say you can clear $25 a head per year on the average. This $2,500 increased net income goes at the top of the formula; the 14% yearly cost at the bottom: $2,500 divided by .14 is $17,857—what you could afford to put out for the set-up and break even.

What if the tool both saves labor and brings in extra income?

All you do is put the COMBINED saving and new net income at the top of the formula.

If the new tool brings in new money, but also takes more labor expense, then put the difference at the top. This is a versatile formula. If the machine or tool is likely to last only five years, instead of the 10 in our standard cost table for machines at the end of this article, just increase the yearly depreciation figure to 20%. Do the same if you want to know what you can pay for a silo, or a feed-grinding set-up that you want to pay for in a certain number of years. Just adjust the depreciation figure accordingly.

If you're considering a loose-housing dairy set-up with a milking parlor, you can figure the yearly expense of the loose housing portion at one percentage rate and the milking parlor at another. You can do the same when a building and an automatic feeding arrangement are combined.

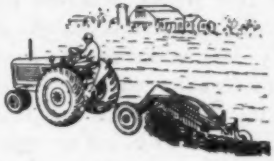
Still another use for the formula is to figure what building expense you should charge an enterprise to see if it is really making you money.

For instance, what is the yearly charge to cattle for the barn and feeding set-up when it cost $8,333? This time, put the unknown yearly cost at the top of the formula. So: $8,333 equals yearly cost divided by .14 or $8,333 x .14, which is $1,166.62. If you have 100 steers, the yearly cost per steer for the building and feeding set-up is $11.66.

STANDARD EXPENSE CHARGES

	Buildings	Farm Tractors	Other Machines; Portable Bldgs.
Taxes, Insur. and Misc.	2%	2%	2%
Maintenance & Repair	2%	5%	4%
Depreciation	4%	10%	10%
Interest	6%	6%	6%
Operating Expenses	—	4%	—
	14%	27%	22%

Don't Wait Too Long To Put Up Hay



That's the first rule for getting high quality forage . . .

Condensed from The Ohio Farmer
B. J. Lamp and *W. E. Gill*

WHEN you pay $30 per ton for hay and still see a drop in milk production, it's then you appreciate high-quality hay.

Yield losses in hay harvesting range from 20 per cent up. You may remember burning off the windrow or chopping the windrow back onto the field for a complete loss. Saving an extra 10 or 15 per cent would in most cases eliminate the spring hay shortage and improve the income picture.

Hay is lost in two general ways —in total weight (dry matter) and in quality.

Weight losses result largely through leaf, biological and leaching losses. You're familiar with leaf loss—it's something you can see. The biological losses occur until the plant becomes dry and result from the need of the living plant for food. This loss frequently is 10 to 15 per cent. Some of the more soluble plant nutrients can be washed away by rainfall, resulting in a weight loss.

Loss in quality accompanies leaf loss since the leaves have much better quality to start with than the stems. Likewise, leaching removes some of the better nutrients from the hay. But, the greatest loss in quality comes from changes in the digestability of the forage with age.

This was demonstrated recently in a cooperative research project at Columbus, Ohio, by agricultural engineers, agronomists and nutritionists. Alfalfa-grass hay cut 10 days before the recommended cutting date had 44 per cent more usable protein and 23 per cent more digestible dry matter for each pound of hay than hay cut 10 days after the recommended date. An animal's performance depends upon the amount of energy obtained. Filling the stomach with low-energy forage will reduce the amount of energy received each day and therefore animal performance will decline.

Probably the one most important rule to follow is to cut the forage when it is ready to be harvested. Not when you are ready, but when it is ready! Complete cutting recommendations are

Reprinted by permission from The Ohio Farmer, 1010 Rockwell Avenue, Cleveland 14, Ohio

available from your county agent for all plants.

But, what about the weather you say. First there is no conclusive evidence that better drying weather generally exists the middle of June and the first of July than the last of May and the first of June. It is true, late-June cut hay will generally dry more rapidly. But, this is largely caused by the greater soil moistures existing in May and early June.

If the change in digestibility of the forage is more rapid than the losses from weather, then it would be better to cut early and lose some from weathering. In the Columbus research project, hay from each of the early (10 days before recommended cutting date) and late cutting (10 days after recommended cutting date) was intentionally permitted to weather for a week or more. The early-cut hay remained in the field for two weeks, received ½ inch rainfall, and was baled at extremely low moisture content with considerable leaf loss. The late-cut hay remained in the field seven days and was baled at regular moisture content. It received during this time two inches of rain. Table 1 presents a comparison between the two hays.

You can see from the table that early cutting was better in all ways except for the reduction in re-growth the following year and in hay color. The longer period of weathering caused the latter drop. Just how early a crop can be cut without a yield drop the following year needs further study.

Obtaining rapid drying so that the time hay needs to remain in the field is lessened, reduces the likelihood of weathering and biological losses. Also, if the leaves and the stems dry at nearly the

TABLE 1 — DATA ON EARLY AND LATE CUT WEATHERED HAY

Item	Early cut	Late cut	% gain or loss over early cut
Dry matter yield #/acre	3170	3820	
Digestible dry matter #/acre	1916	1620	+ 20 gain
Digestible protein #/acre	348	294	− 15 loss
Leaves, per cent by weight	47	34	− 15 loss
Color, per cent	12	24	− 28 loss
Hay, grade	#3	#3	+ 100 gain
Weed free, dry matter yield next year #/acre	1701	2413	+ 29 gain

TABLE 2 — CUTTING DATE AND HARVESTING METHOD AFFECTS DRY MATTER AND PROTEIN (First cutting only)

Description	Digestible Dry Matter Per cent	Digestible Dry Matter #/Acre	Digestible Protein Per cent	Digestible Protein #/Acre
Early cut, hay-in-a-day	61.4	2420	11.8	464
Early cut, weathered	60.5	1916	11.0	348
Late cut, hay-in-a-day	56.8	2860	8.1	408
Late cut, weathered	42.3	1620	7.7	294

New Subscription Order Form

Send FARMER'S DIGEST to me for

☐ 1 Yr. at $3.00 ☐ 2 Yrs. at $5.50 ☐ 3 Yrs. at $7.75

Name _____

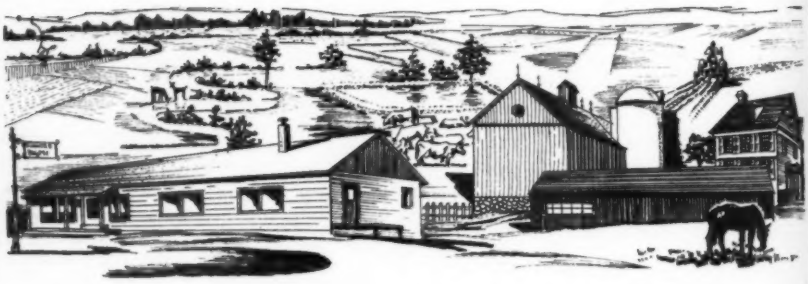
R.F.D. or Street _____

Town and State _____

I enclose $_____. ☐ Please bill me.

Above prices apply to U.S., U.S. Possessions and Canada. Other countries: 3 years $9.25; 2 years $6.50; 1 year $3.50.

Mail to — FARMER'S DIGEST
Fort Atkinson, Wisconsin



Here's a sketch of our farm where we publish Farmer's Digest. Our 200-acres are planted to corn, alfalfa, grass and trees. We farm — and we publish our magazine on a farm — because we believe that's the only way we can know what other farmers want to read. Farmer's Digest is probably the only farm magazine in the world published on the farm by farmers.

same rate, leaf loss from turning and handling will generally be reduced.

Field conditioning of hay by either crushing or crimping has proved to be an excellent method of speeding the drying rate and reduces the time lag between cutting and hay removal. The figure compares crushed and uncrushed hay drying rates. When the crushed hay could have been baled (20 per cent), the uncrushed hay was still over 40 per cent moisture. The next day, rain started and continued on through the night. On the next drying day the crushed and uncrushed moistures were 30 and 38 per cent respectively.

Artificial drying of hay either in storage or in wagons has also proved to be an invaluable method for reducing losses and maintaining quality. At the time the weathered samples (Table 1) were cut, additional hay was cut and crushed, permitted to field dry as much as possible during the day, and then baled and wagon dried. This hay was referred to as hay-in-a-day, since all operations except for drying were completed during the same day. This hay yielded 50 per cent more usable dry matter and 13 per cent more protein per acre than the weathered plots. The quality of the late-cut wagon-dried hay on a per pound basis was considerably inferior to the early-cut weathered hay, however. (See Table 2.)

Volume of U. S. agricultural output is about equal to mainland China's and almost 60 per cent larger than the Soviet Union's. These countries account for about 40 per cent of the world's output of farm products.

One-day harvesting will generally be impractical in most areas. Yield gain from artificial drying of hay removed from the field at high moisture is well established, however.

Quality of hay is closely associated with cutting date. Mow when the plants are in the proper stage of growth. Timely cutting will generally result in as much or more usable (digestible) hay per season than delayed cutting. The yield of second and third cutting will be considerably greater.

Excessively early cutting may reduce the weed-free yield the following year.

Conditioning hay through either field crushing or crimping or by barn and wagon drying will reduce drying times and result in greater yields and better quality than non-conditioned hay.

Remember however, that you can harvest only what's in the hay field regardless of equipment available. Obtaining good stands of quality forage starts with seeding.

Let's Raise Those Pigs

Shoot for nine raised per litter with a 56 day 400 pound litter weight . . .

Condensed from
The American Hampshire Herdsman

LARGE litters raised are essential to profit and success in the hog business. Proper management at farrowing time and until weaning are the key to the number of pigs raised by each sow in the herd.

Good farrowing time management requires careful preparation. The housing system to be used should be planned well in advance and made ready before farrowing starts. Equipment must be made ready and other items such as medicines, record books, etc. should also be on hand in advance.

Strict sanitation is a must to good farrowing time care. This means a clean house or farrowing quarters; a clean sow; and a clean pen, house, or lot in which the pigs are to be raised.

Scrub the farrowing house or quarters with boiling lye water (20 gallons water to 1 pound lye). A steam cleaner is preferred. They can sometimes be rented if the volume is not large enough to afford owning one. All equipment should get the same boiling lye water treatment.

Wash each sow with soap and water. Scrub her thoroughly especially the udder and flanks. Do this before placing her in the farrowing house.

If litters are to be raised in confinement the entire confinement area must be thoroughly cleaned. If to be raised on pasture the area to be used should have been plowed and reseeded since pasturing hogs.

The sow herd can be kept free of external parasites by spraying with a 0.25 percent solution of benzene hexachloride or chlordane at intervals of 2 or 3 months. If this job was neglected try mixing lindane with the water used for washing the sow. Follow the directions of the manufacturer in using all such preparations.

Three to seven days prior to farrowing, the sow should be moved to the farrowing quarters and placed on a bulky, laxative type of feed. Equal parts bran and

Reprinted by permission from
The American Hampshire Herdsman, N. Main Street, Pontiac, Illinois

ground oats will do. Mixing about 40 percent bran with the regular gestation ration makes a satisfactory ration. Water should be available to the sow at all times.

Generally sows do not need any feed the first day after farrowing. However, sows vary in this regard. Some sows will be less restless and more comfortable if fed when they appear to want to eat. The same bulky, laxative feed is best at this time. The regular lactation ration can then be added gradually until the sow is on full feed in a week to ten days.

If farrowing crates are used the sow should be placed in the crate at the first appearance of milk in the udder. How long to leave her in the crate depends on their availability and the farrowing and housing system used. Heat bulbs make a good source of heat for the little pigs. Use care in installing them to avoid the danger of fire or burning the small pigs. Temperature in the pig nest should be about 85 to 90 degrees.

A moderate amount of bedding should be used. Don't skimp but don't use too much. Chopped straw, ground corn cobs, wood shavings, saw dust or other similar materials make good bedding.

The most successful hog producers will have an attendant on hand at farrowing time. What can be done at this time depends considerably on the equipment and facilities available. When an attendant is on hand he can remove the mucus from the mouth and nose of the pigs as farrowed and give assistance when needed. The pig's navel cord should be dipped in iodine, tied in a knot close to the body and then clipped off below the knot.

Most producers prefer to clip the needle teeth of larger litters. Use a pair of side cutting pliers made specially for this job and be careful to make a clean cut and not crush the teeth or jaw.

It pays to ear notch pigs at birth. This is a must in a purebred herd. It can help commercial producers in the selection of gilts from the better performing litters.

Weak pigs can be helped by injecting 2 cc of glucose in each ham or foreflank for 2 or 3 days.

Some sows fail to come to their milk following farrowing. Two cc of diethylstilbestrol on alternate days for 3 days will usually start the milk flow. A two cc injection of pitocin will also usually start milk flow.

Mastitis frequently occurs and

When only fast-growing trees are left in the farm forest, they have more room to grow. Quality is better, seeding easier. Foresters say their growth rate may increase two or threefold within five years after poor stock is removed.

can usually be brought under control with an injection of 5 cc of combiotic into the ham each day for 2 to 3 days.

Anemia is likely to be a problem, especially where pigs do not come into contact with the ground by the time they are a week old. Anemia can usually be prevented by iron injections. It may be given in various ways. Follow the instructions provided by the maker of the iron treatment to be used.

Baby pigs prefer their mothers milk to other feed as long as it provides enough nutrients to meet their requirements. However, baby pigs have a natural curiosity and will start to eat additional feed if provided in the right form. Provide a creep for baby pigs before they are ten days old. Use a good pig starter feed.

Scours is often a problem with little pigs. Two cc of combiotic injected into the ham for 3 successive days is an effective treatment. Where scours has been a problem many producers like to follow a prevention program by fortifying the sows normal ration with nf 180 according to the directions of the maker starting one week before farrowing and continuing for two weeks after farrowing.

The farrowing quarters should be kept clean at all times.

Portable Housing For Sows And Gilts

Coming on like wildfire is the use of portable housing for sows and gilts. It's a good management practice. But the houses are changing their silhouette from the old A shape.

Now they look like cigar boxes—or like modern homes! Rectangular and boxey they feature a flat shed type roof. There's a reason.

In summer you can lift up the back side to provide shade for the hogs and air movement through the house. These houses come in any size from 6 by 8 feet on up with the 8 by 16 the most popular right now.

Some folks don't put a floor in, but you should. Don't worry, the sows will leave the building to manure. This saves labor and bedding.

And this exercise is healthy for the sows. It is easy to keep things sanitary as you can move the house from one location to another, and you can clean and disinfect a house in no time at all.

So you have a dry, clean, draft free sleeping house for sows and gilts before and after farrowing, and some folks have even been known to use them for farrowing.

You'll see them sprouting up like weeds in the garden patch this year.

Litter-Ature

My Life With Jack

A strictly fictional (we hope) story about a lovable but leavable hired hand named Jack . . .

By *Peter Lewington,* Larigmoor Farm,
Ilderton, Ontario, Canada

SOME people consult marriage counsellors and even get mail order brides. This contains an element of risk but certainly does not approach that inherent in the mail order hired hand for the farm.

Jack's references were glowing. They were absolutely impeccable: "We are keenly interested to learn our esteemed employee is considering another post. We will place no obstacles in his path as he is desirous of leaving us. We will facilitate his departure and wish him God speed".

I met Jack at the station and as we stepped into the street his hat flew away. He made a futile (and I thought rather ineffectual grab at it) and was off amongst the traffic in pursuit. I stifled my misgivings. This could happen to anyone. When he returned with a flat fedora his good humor was undiminished. He evidently had a sunny disposition and I mused upon his erstwhile employer's generosity in not hanging on to so cheery a chap.

He climbed into my old boneshaker, a surplus fifteen hundredweight army truck and in his haste to get to grips with work back on the farm, kicked over a half gallon crock of sulphuric acid we use for butter fat testing of our cows.

We were a little late in getting home. I had to cash a check at the bank and get him a new pair of boots and two sets of overalls. After all he was my responsibility and he could hardly start to work without the seat of his pants or the toe missing from one boot. Anyway it was probably all my fault. I should have warned him about kicking over the acid.

One of the fascinations of farming is that there is always something new to learn. One maxim known to wiser men than I is that "dear seed means a cheap crop". And so it was with potatoes. Four dollar seed was followed by a dollar and ten cent potatoes. However, with ten acres to sell I lined up contracts with several large stores and they were selling quite briskly. Jack's first job was grading and bagging potatoes and he evidently enjoyed the work. Snatches of popular songs came

from the root cellar as he diligently applied himself.

As soon as a load was ready I sped to the city and paid the money into the bank to recoup the unexpected clothing out-lay. Jack's merry disposition was infectious and I returned home whistling, to be greeted by my wife with the tense news that two chain stores and a corner grocery would call the Government Inspector if the potatoes were not immediately replaced.

It was soon apparent that Jack's mind was not really on his work and while he carefully sorted the potatoes he repeatedly forgot which bags were for table potatoes, for seed, or for the culls!

But spring brought some relief. The bright long days were fully filled and I was glad of my companion's assistance for the busy seeding. It was as well that I now had some help for we both were fully occupied. Jack ran the tractor from dawn to dusk

It's not necessary to take a person's advice to make him feel good — all you have to do is ask it.

and I busied myself with the repair of machinery and driving back and forth to the city for spare parts. It seemed that all the machinery was wearing out at once. Pins sheared, chains parted, quite strong braces snapped having past their endurance; metal fatigue I thought. I was too busy replacing, welding, brazing and rivetting to associate the rash of repairs with Jack. It was purely coincidental that the two had come together.

I was just putting the finishing touches to the seed drill when I noticed Jack coming down the lane; his musical whistle preceeding him. It looked as if he was rolling a rubber-tired wheel from the plow, rather like a child's hoop. It turned out that I was not mistaken. Quite unaccountably it had snapped all around the axle flange.

It was a small repair job, just a few dollars and after dinner he was back on the job. But not for long. History repeats itself and so apparently did Jack for he was soon back with the other wheel. It transpired that in his sincere efforts to put up a good showing he had cut down the turning time on the headlands by not lifting the plow out of the ground. It was not an unmixed blessing.

And so, rather slowly I thought, the days and weeks passed and we were soon into the haying season. We took turns in building the loads but after two of Jack's had fallen off I built them all. I must say that this made for more harmonious relations and Jack was certainly more rested driving the tractor. Perhaps it was

the monotony of the job or he may have been carried away with his singing (and he had a good voice, if you liked that particular song) but he did have some difficulty following the windrows.

Back at the barn the army truck was called into play for pulling off the loads with the aid of hay car, ropes and pulleys. Rope can be an inanimate object or a coiled viper. With Jack at the wheel it came to life. It fastened to the drive shaft; it got under the wheels. It was, in short, frustrating.

We found difficulty in co-ordinating our efforts. When I wanted a little slack in the rope to sink the fork in the hay Jack would surge ahead. When I was ready for hauling away he would either snarl the rope, back up or go off for a drink. It was of course hot, thirsty work.

Once he returned, unknown to me; with an unsuspected turn of speed the rope twisted around my foot and tightened as he tramped on the accelerator. I shot upwards, like the Empire State elevator and was deposited in the hay mow completely winded.

Bread has one of the highest marketing margins. The farmer gets less than 3 cents for a 20-cent loaf.

Jack found me there still very shaken. "I say, old chap, I've been looking for you. I didn't know you had come up to mow away". My hands tightened on the fork handle and I jabbed viciously at a wad of clover hay.

As time went on I realized that I was not the employer that Jack really needed and so he went away every Friday night for a week-end pursuit of other employment. Each Monday he returned with the sad news that none could be found, but he did have the distinction of being the only hired man in Canada working a five day week.

Jack had good points, of course. They were just not the dominant ones. No door or gate was ever shut. The cows were often literally in the corn. The barn doors were always ajar and this a cow can locate with fantastic speed. Life became more trying with each passing day. Put to hoe the garden Jack broke the hoe handle without cutting a weed. This in itself was an accomplishment.

Summer drew to a close and it was time to load the steer for the slaughter house. As I backed the truck into the yard, Jack, (ever eager to anticipate events) had led the beast out into the yard instead of waiting in the box stall until the truck was in position.

Perhaps it was Jack's whistle or the backfiring of the truck but suddenly off sped the steer with Jack in pursuit. He had to fol-

low for the frayed whipping of the halter rope was twisted around his little finger. They passed me at a brisk pace. The steer quickly gained a lolloping stride and Jack, with a turn of speed unapproached all the year, followed arm and finger outstretched.

I leaped from the truck and joined the procession. The steer in the lead, Jack following at a fixed and enforced distance. On we went down the track, through the pasture and across the river flats. The steer wheeled smartly around the elm tree and once again we were on the track racing for the barn. I knew Jack's endurance must be flagging; mine was. I shouted to Jack to grasp the halter with his free hand and fall to the ground. This storm anchor slowed the steer and it was quickly tethered.

Jack was prostrate, undecided whether his finger or his chest, grazed in the wild toboggoning, hurt the most. Fortunately there was no lasting damage and a chair in the shade of the old willow on the lawn soon effected a recovery.

With three sows due to farrow Jack's first job was to disinfect the pens. Stripped to the waist he swept the floors absolutely bare, seized the can of disinfectant and removed the cork by the simple expedient of jabbing it with his thumb. In went the cork and out spurted a brew labelled "one hundred and sixty times stronger than carbolic acid". It probably was, judging from the effect upon poor Jack's chest. Or should I say Jack' poor chest.

And so the days of Jack's tenure slipped by and the final job was assisting the neighbor fill silo.

"You just haven't been fair about Jack" said my neighbor. "He is the cheeriest, most willing fellow I've known". I nodded, "Cheery yes, willing, yes, but absolutely jinxed".

The day's work had just begun and Jack sped off with the neighbor's brand new wagon. He had not gone fifty feet before a hind wheel flew off. The wagon went on with the axle sending up a shower of sparks. I looked at my neighbor but neither of us said anything. Anything, that is, that I'd care to repeat.

Too much light given chickens at too young an age reduces egg production.

USDA poultry researchers found that hens under normal daylight conditions (10 to 12 hours) had good, well developed combs and produced the most eggs. Hens given 16 hours of light per day had poorly developed combs and produced fewer eggs. —*Alabama Farmer*

Cut Dairy Feed Costs 25%

First, improve the quality of your forage. Then, feed more forage but less protein and grain . . .

Condensed from The Furrow

Ralph Hughes

THE most important single factor in dairy cow nutrition is daily forage intake.

You simply cannot get a high-producing milk cow to eat enough forage to meet all her needs. Concentrates are needed to fill the gap. The secret to cutting feed costs 25 per cent lies in your ability to make hay and silage that are so appetizing each cow will eat a great deal more, thereby keeping the amount of high-priced concentrate needed to a minimum.

Michigan State University studied forage production and feeding practices of 34 dairy farms and found a wide range in both quality of hay and silage produced and cost of producing milk. However, one point was clear: Farmers who harvested and fed hay and silage of excellent quality produced 100 pounds of milk at a cost 46 cents less than did farmers who used poor-quality forage. Returns above feed costs were $65 per cow in favor of excellent-quality forage (see table at end of article).

Feed costs are too high simply because many farmers don't know the actual feeding value of hay and silage fed. Some dairymen over-feed protein and grain because of this uncertainty, while others with poor forage often do not feed enough protein to balance out nutritional requirements. Its a costly guessing game—like fertilizing without a soil test.

The quality or feeding value of a forage is largely determined by: 1. percentage of legume in stand, 2. date of harvest, and 3. harvest and storage methods used.

One way to improve forage quality is to change the kinds and proportions of legumes and grasses planted. A stand with 70 per cent or more legumes—such as alfalfa—is considered excellent. Stands consisting largely of grass-

Reprinted by permission from The Furrow, Moline, Illinois

es and less than 35 per cent legumes are usually considered poor.

Save The Protein

Early harvesting is especially important in producing nutritious hay and silage. It is difficult to save the protein in forage unless hay is conditioned and barn-dried or forage is harvested as silage. Early-harvested forages from high-legume stands test from 16 to 21 per cent total protein on a dry-matter basis. Late-harvested, grassy forages may test as low as 4 to 8 per cent protein and, therefore, must be supplemented with an expensive protein concentrate. When the intake of excellent quality alfalfa or alfalfa-grass forage is high, the protein requirements for cows producing 40 to 60 pounds of 3.5 test milk daily can be met by supplementing with low-cost, home-grown grains—and dairy feed costs can be cut 25 per cent.

QUALITY OF HAY, GRASS SILAGE AND PASTURE

	Excellent	Medium	Poor
Number of farms studied	8	19	7
Average cows per farm	21	24	25
Average production per cow (lbs.)	12,043	11,531	11,727
Grain fed per cow (lbs.)	2,614	3,114	3,921
Protein fed per cow (lbs.)	189	467	519
Milk per pound of feed (lbs.)	4.3	3.3	2.7
Feed cost per cwt. of milk	$ 1.32	$ 1.65	$ 1.78
Return above feed cost per cow	$324.00	$273.00	$259.00

Based on following prices. Hay $18.60 T., grass silage $7.80 T., farm grain $2.40 cwt., and soybean meal $4.60 cwt. M.S.U. data.

Enough But Not Too Much Calcium Needed

Seven tenths of one per cent of calcium in the ration of baby pigs between 2 and 6 weeks of age resulted in the best growth rate.

According to Iowa research, rations containing the equivalent of 25% dried skimmed milk gave a retarded growth rate when the calcium content of the ration got as high as .8 of one per cent of the total ration. On the other hand, a ration containing only half of one per cent calcium lacked enough calcium for best growth. In some cases calcium levels above .7 per cent not only reduced the pig's growth rate, but also reduced feed efficiency.

—American Hampshire Herdsman

Are Pastures Out Of Date?

Final answer may well be to use green-chop and all-silage forage programs WITH pastures, not INSTEAD OF pastures . . .

Condensed from The Progressive Farmer
W. W. Woodhouse, Jr., Soils Department,
North Carolina State College

INTEREST in green-chop and all-silage systems have drawn attention away from pastures in recent years.

One might get an impression that pastures are old-fashioned and out of date. We are aware of the fact that there are pastures which might well be replaced with something else. So, maybe it's time to take another look at the subject.

We look to pastures as a low-cost source of succulent, nutritious, green feed for livestock. They have been the source of much of our livestock feed for a long time. There are, however, other ways of getting this job done; ways that are, under some conditions, better than grazed pastures. Let's look at these other methods.

Green chop is a modern, mechanized version of a very old practice. People have been cutting forage and carrying it to livestock for 2,000 or 3,000 years. There's a tendency to go to this method where land becomes scarce and labor plentiful. Green chop cuts down on waste. There's no more trampling and fouling of valuable forage. You can make animals clean up the last sprig, if you wish.

Modern agricultural machinery has given green chop a new twist, by greatly reducing labor requirements. Green chop starts looking good to the present-day dairyman as size of his herd increases and pastures get farther and farther from the barn. In fact, as dairies grow in size, a point is eventually reached where it's a question of green chop (or all silage), or of dividing the herd into smaller units. It's just not practical to drive milk cows out so far to pasture.

Drouths as well as rainy spells tend to foul up a green-chop program. One week you have plenty to chop, the next week it may be too short to be worth going over. On other days you may not be able to get on the field.

All-silage programs do much the same things as green chop.

Reprinted by permission from The Progressive Farmer, 821 North 19th St., Birmingham 2, Alabama

But they get around the common trouble of too much forage one month and not enough the next. With silage, you are also able to take advantage of big tonnage annual crops such as corn and the sorghums. On the right kind of land, these crops can be made to outyield pastures, tonnage-wise. There is some loss in the ensiling process. The best silage will usually come out second best to fresh green material.

Both systems require large, fairly level fields for efficient machinery operation. Silage, in particular, takes a lot of "row crop land"—soils that will stand regular cropping with high-yielding crops. We'll still have to stick with pastures or with other crops rotated with pastures on fields that are too steep and erosive or too wet or too small for regular row crop treatment. Even with level fields and the better soils, we can't be sure they'll stand silage every year. But the only people who've been having good luck with continuous silage for any length of time have been putting large amounts of manure on small acreages. We may still have to rotate silage with sod crops to maintain productivity of a lot of our soils.

Farm people now comprise only 10 per cent of our population, but represent the biggest industry in the United States. More than 40 per cent of the nation's labor force depends either directly or indirectly on farming for its livelihood.

To Summarize:

1. We have lots of land that can best be used for pastures. It doesn't lend itself to other systems of forage production. These pastures can produce a lot of good, cheap feed, if we do a good job of what we already know.

2. Larger farms, particularly dairies, with enough of the right kind of land, are likely to go strong for more green chop, combined with heavy silage feeding.

3. Every time we mechanically harvest a ton of forage, we add to its cost. We may be able to offset a part of the cost by having it where or when we need it the most.

4. The use of silage and green chop will and ought to increase. Their best use, in many cases, will be to supplement rather than replace pastures, to fill in gaps and low spots in the grazing program.

5. Let's not overlook the use of silage crops in pasture renovation. Some of the best silage crops we've seen have followed plowing out of a weedy pasture. And certainly a heavy crop of silage will go a long way in cleaning up a field to go back to sod. Even our more erosive soils will stand a

good silage crop every few years, sandwiched in between an old and a new sod.

6. Perhaps above all, we need to keep reminding ourselves that soil is our basic resource on most farms. We'll have to make efficient use of it to stay in business in the years ahead. This means fitting the crop to the land and then making the best possible use of the crop once it's produced.

Do You Believe In Moonlore?

Do the phases of the Moon have an influence on progress of crops?

Many of today's farmers will tell you they consult an Almanac to determine the date of Full Moon only when they wish to plan a winter skating party on the pond, or a summer evening picnic.

But many oldtimers will tell you there is more to the Moon than meets the eye—and that there's a proper time for planting beans, or shingling the roof, or shearing sheep, which can be determined if you know the "signs".

MOONLORE, a booklet which delves into this subject, has been published by John Baer's Sons, a Pennsylvania firm which has been publishing the Agricultural Almanac since 1825.

If you read MOONLORE, you will find such interesting items of information as these:

Beans should be planted when the Moon is in the "up" sign, or increasing, so that they will readily pole.

A roof should be shingled when the Moon is on the wane, else the shingles will curl up at the edges.

Sheep should be sheared in the increase of the Moon.

MOONLORE also deals with signs of the Zodiac as they are said to affect farming and gardening. The Pennsylvania Dutch, who are great followers of Baer's Almanac, say that flowers planted in a day that comes under the sign of the Virgin, or "Posy Lady", produce profuse bloom.

The material in the booklet was traced out by Gerald S. Lestz, editor of the Almanac, from printed and oral sources. He comments in the foreword: "Those who pay attention to MOONLORE say it works." The booklet is sent postpaid anywhere in the world for 35 cents. Order from Baer's, Box 328, Lancaster, Pa.

The Cow: A Calf Factory

She will do her task well if her owner gives her a modicum of care and meets her nutritional needs . . .

Condensed from
The American Hereford Journal

Harry H. Smith, former extension animal husbandman in Colorado and Utah

SPRING can be a very difficult time for both the cowman and the cows with calves.

How difficult a time it is depends to a large extent on the way the cows have been wintered and the preparation which has been made for the calving season.

Calving-time is really something you prepare for throughout the year. It is not something that can be left until the calves begin to come. Some of the preparation for this spring started last summer when the breeding season began. In fact, last summer was one of the most critical times in preparing for this spring's calf crop.

If those bulls went into the breeding season without being properly conditioned for it, the result is showing up in this spring's calf crop.

A good first step in preparing the bull for his contribution to the calf crop is to have him tested for fertility. No need of carrying a bull on any longer if he gives evidence of not being able to contribute efficiently to siring his share of the next calf crop.

There are a good many surprises coming to fellows who start testing for the first time in sections where testing has not been done before. In Colorado, about one bull out of 10 was found to be almost useless in the sections where testing for fertility had not previously been done.

I spent many years in Utah and Colorado visiting numerous ranches and cattle herds each spring for the purpose of grading bulls in compliance with bull-grading programs in those states. As this work was always done in March and April we saw the bulls just after they had come through a rugged winter. Some of them were not in good breeding condition, which made it necessary to give them a low grade. They were just too thin to give a good ac-

Reprinted by permission from
The American Hereford Journal, 500 Graphic Arts Building, Kansas City 5, Missouri

count of themselves during the breeding season ahead.

Feed and Exercise Essential For Bulls

Bulls can be kept in strong and vigorous breeding condition during the winter only if they are given plenty of feed and sufficient exercise. Most western range bulls get sufficient exercise during the winter, but too many of them are likely not to get sufficient feed.

The bull is one range animal which often will repay many times the cost of furnishing him a small amount of grain, one to three pounds, or a pound or two of cake, along with sufficient roughage, during the months immediately preceding the breeding season. The importance of having the bull in the pink of condition at the beginning of the season cannot be over-emphasized. Most western ranchers realize that they cannot expect the maximum calf crop unless such a program is consistently followed.

Records taken by Parr and Klemedson over a three-year period on a number of ranches in northern Texas several years ago showed that where the bulls were separated from the cow herds in the fall—were given extra feed during the winter and then returned to the cow herds about June—the calf crop was 13 percent bigger than when the bulls were allowed to run with the cows throughout the year. Similar results also were found from surveys taken in some of the other western states.

Since the first of the present year, many ranchers have bought young bulls to produce next year's calves—and more will be bought between now and the beginning of the breeding season. Some of these bulls may be carrying considerably more fat than is really good for them. Where they are excessively fat, it is desirable to get rid of some of it. Here is where the skill of a cattle herdsman yields a dividend. It is the letting-down process that may prove harmful. It is not injurious to a bull to fatten him, but any extra fat he may be carrying should be taken off slowly before he goes into steady service.

Any person who stands a head taller (socially, financially, mentally or physically) makes an excellent target.

The cow herd must reach spring in strong, thrifty condition if the matrons are to produce and raise good husky calves. As I worked with ranchers throughout the years and have observed the practices followed in feeding the cow herd through the winter months, I have reached the conclusion that the greatest weakness in wintering stock cattle is a lack

of pounds of feed. In many cases, it is a matter of not getting enough feed.

Animals, of course, may be undernourished because of some dietary deficiency. Protein, as well as one or more minerals or one or more vitamins, may be missing. If an animal is undernourished because of the absence of a certain nutrient from the ration, fertility may be impaired.

Certain vitamins are important in reproduction. It is generally thought that a lack of vitamin A is one of the principal nutritional deficiencies among farm or range animals which is an important cause of calves being born weak or dead.

Vitamin A in the form of carotene is stored in the liver during the summer when the feed is green. Ordinarily this will be sufficient to carry the animal until the grass comes again. Trouble is likely to develop in time of drought when the grass dries up during the summer, resulting in a long period without any green feed. During the dust-bowl days, many cows aborted during the spring because of a lack of vitamin A. Whenever calves are being born dead, premature or weak, or the afterbirths are being retained, an owner will do well to consider whether or not sufficient vitamin A is present in the feed. The few times, I have had a chance to observe herds in which calves were being lost because of a lack of vitamin A, the losses stopped almost like magic when three or four pounds of good alfalfa hay or a pound or two of dehydrated alfalfa were put into the ration.

Avoid A Phosphorus Deficiency

Several mineral elements are generally considered essential to animal life, but the one most likely to adversely effect reproduction is phosphorus. A deficiency in phosphorus will cause irregularity in breeding since it has a marked inhibiting effect on the regular occurrence of heat. Cows on a ration which is deficient in phosphorus will very likely produce only once in every two years. There are certain areas of the United States which are phosphorus-deficient. A phosphorus deficiency can be taken care of by supplying some phosphorus supplement, such as bonemeal. The addition of a phosphorus supplement to cattle rations on phosphorus-deficient ranges, especially under southwest range conditions, has resulted in a marked increase in the calf crop.

People who won't stand on their own feet shouldn't complain when others do.

In recent years, there has been considerable discussion of the importance of the rare or trace min-

erals in the rations of livestock. Such elements as iron, manganese, copper, sulphur, iodine and cobalt are present only in minute amounts in virgin soil. They have been depleted through leaching and cropping so that not more than a trace remains. Feeds grown on such soils do not supply the animals with their requirements for these elements.

It is doubtful that these elements constitute a problem for the western rangeman whose cattle are run the year around on ground which has never been cropped. Thus, it is likely that very few western cowmen have need to worry about trying to supply trace minerals. If one has any reason to suspect that his range is lacking in any of the trace elements, he can easily remedy it by feeding a mineralized salt which is fortified by the trace element in which his range is deficient.

We have long known that cows to do well must have a certain amount of protein per day. The amount of protein supplement which needs to be fed to a herd of beef cows is determined by the protein content of the other feeds that are being fed. The thousand-pound pregnant cow needs .75 to 1.4 pounds per day during the first three to four months of the life of the calf.

Whether one of the oil cakes, cottonseed, soybean, linseed, etc., or clover or alfalfa hay is used, doesn't make much difference to the cow, but it might make considerable difference to the owner's pocketbook. I remember several years ago visiting a rancher in eastern Colorado who was buying cotton cake to feed to his range cows when he had close to 100 tons of good alfalfa hay just over the fence from where his cow herd was located. There was no other use for it except as feed

Total investment in the business of agriculture in the United States exceeds $208 billion, or about four-fifths of the value of all the nation's corporations.

for those cows. It was the best source and cheapest protein he had. No doubt the cows at that time of year would also have appreciated the vitamin A which the alfalfa contained. Generally, we can say that as far as the protein is concerned, the cheaper source is the best source.

Good Protein From Native Clover

The grass hay cut from many of the mountain meadows here in the West may contain a considerable amount of native clover, and if cut at the proper time it will furnish all of the protein needed. If this hay is cut too late, however, it may have very little protein. Therefore, it is highly im-

portant in producing good quality hay to cut it at the right time —and the right time is the early-bloom stage.

A South Dakota Experiment Station bulletin shows that early-cut hay had 7.43 percent protein, medium-cut hay had 6.11 percent and late-cut had 4.9 percent. Some work of the Colorado Experiment Station in cooperation with cattlemen in the Gunnison Valley showed that early-cut grass hay might rate 8 percent or higher in protein.

Cattle are usually wintered on the western plains on grass which has cured on the ground. This grass, if in good condition, will usually run around 2 percent protein. Animals on this kind of feed would be consuming only half or less of their required protein. A pound of cottonseed cake or four to five pounds of good alfalfa hay will correct the lack of protein.

The calf is the cattleman's annual crop. It is important in the extreme that he observe every precaution in the spring to see that the youngster arrives safely and gets started right. But the owner's success will rest also on how well he looks after the needs of his breeding herd—his cows and herd bull—throughout the year, maintaining them in good health and anticipating, and then fulfilling, their nutritional requirements.

Mercury Compounds Poisonous

Seed treated with mercury compounds such as those used for treating wheat, is poisonous. Such treated seed should not be used for food nor should it be fed to livestock, says Eric Sharvelle, Purdue University extension plant pathologist.

Treated seed can be held over and planted the following year, Sharvelle explains. Seed that has been properly cured and dried before treatment can be stored for a year with little loss in germination. Store treated seed grain in loosely woven sacks that are clearly marked as containing treated seed, the plant specialist suggests. Allow plenty of space for air circulation around sacks of treated grain.

Store grain in a cool dry place. It always is advisable to run a germination test on all seed just before planting. Then if the germination has dropped, any necessary adjustment can be made in the seeding rate to assure a good stand. —*Purdue University*

The Miracle Substance

Continuous cropping depletes organic matter. Grass rotations build it up . . .

Condensed from Crops and Soils

J. L. Mortensen, Ohio State University

ORGANIC matter is one of the most remarkable and valuable components of any soil.

No other material contributes as much to soil productivity. This miracle substance improves soil structure, helps prevent soil erosion and leaching losses of nutrients, supplies nutrients to plants, and increases the water-holding and nutrient-holding capacity of the soil.

Soil organic matter is both a natural product and a synthetic material produced in a busy biochemical factory in the soil. The raw material from which organic matter and humus are manufactured is largely in the form of plant remains and dead organisms. Before these raw materials are taken into the factory, they may form a mulch on the surface of the soil where they reduce erosion and evaporation of moisture.

Soil microorganisms decompose these materials and even form some new compounds. By-products like carbon dioxide, water and inorganic elements are continually released. The remaining material which is quite resistant to further decomposition is called humus.

The rate at which this soil factory can work has been recently determined by using plant tissues containing radio-active carbon. Measurement of the radioactive carbon dioxide by-product indicated that as much as 7 tons of cornstalks per acre can be "processed" in 9 months by the soil microorganisms. A smaller percentage of the material is used up if it is added in large quantities instead of small quantities.

Some of the synthesized compounds, the polysaccharides and polyuronides, act as glues to cement individual soil particles together and form water-stable aggregates. The resulting improvement in soil structure permits better aeration, drainage, infiltration of water and control of erosion. These natural soil conditioners are long chain-like substances containing some eight or more sugar units.

Reprinted by permission from Crops and Soils, 2702 Monroe Street, Madison 5, Wisconsin

Negative electrical charges are spaced along the chain and become attached to the positively-charged sites on the edges of clay particles. This also occurs when negatively-charged polyuronides and clays are linked together by hydrogen atoms or positively charged nutrient elements. When these long chains are attached to "bridges" between the soil particles and hold them together to the clay particles, they form water-stable aggregates.

These materials do not last too long in the soil for they are used by other soil microorganisms for food. Fresh supplies of crop residues must continually be added to the factory in the soil, so that polysaccharides and polyuronides can be manufactured for the stabilization of good soil structure.

Improvement of soil structure by organic matter increases the number of tiny pore spaces in the soil in which water may be stored for plant use. Soils containing large amounts of organic matter will absorb and hold water like a sponge.

Mulches of crop residues help prevent the evaporation of moisture from the soil surface. Water which clings to the surface of the organic matter particles also adds to the water reservoir of the soil.

Soil organic matter contains many elements which are necessary for plant growth. Small quantities of nutrients may be taken in by the roots in organic form, but most of these elements must first be mineralized or transformed to the inorganic or mineral form.

Much of the nitrogen in organic matter is probably in the form of proteins, amino acids and amino sugars. The nitrogen in these compounds must first be mineralized by soil micro-organisms to ammonium and nitrate nitrogen before plant roots can absorb it. By using plant tissues containing "heavy" nitrogen it has been found that the rate of mineralization at uniform temperature and moisture conditions is quite constant in some soils. Thus, the nitrogen in soil organic matter is slowly released to plants and provides a sizeable bank account for future use.

Recent experiments with plant residues containing radioactive phosphorus have shown that the greatest quantity of phosphorus becomes mineralized and available to plants after 50 days of decomposition.

A farm conservation plan is the only safe shortcut to a permanent agriculture.

Potassium is not "tied up" in organic compounds. The potassium in crop residues and soil organic matter is largely water-soluble and available to plants.

The carbon dioxide released during the decomposition of or-

ganic matter also increases availability of nutrient elements. The carbon dioxide gas dissolves in water, becomes a weak acid and makes soil minerals more soluble.

The trace elements like iron and zinc are held by some compounds in soil organic matter, much like a crab would hold a piece of sand. This arrangement, called chelation (or chelates) by chemists, holds these elements in a form which is readily available to plants.

Soil organic matter, however, cannot provide enough of the nutrients a high-yielding crop requires. Supplemental fertilization with commercial materials is required for practically all soils.

Soil organic matter has a net negative charge and attracts and holds positively charged nutrient ions like a magnet attracts and holds pieces of metal. The negative charges are due to several kinds of chemical groups and increase with the formation of humus.

A good share of the ability of soil to hold plant nutrients in an exchangeable or available form is found in organic matter. Pound for pound, this miracle substance has a greater capacity to hold nutrients in this manner than does clay. Leaching losses are reduced since these nutrients which cling to organic matter are difficult to wash off by water.

Organic matter imparts a dark color to soil, which increases the absorption of heat from the sun. It acts like a dark suit of clothes —the wearer gets much warmer than if he wears light-colored clothing. Soils high in organic matter usually warm up quite rapidly in the spring and permit earlier seedbed preparation and planting.

The stockpile of this miracle substance in the soil will be reduced if the biochemical factory is not continually supplied with raw materials. All of the organic raw materials produced above ground, such as green manures, plant residues and animal manures, should be plowed under to supply the factory. Farmers need not worry about applying too much residue. They should plow under all that can be produced.

If your farm was wired before 1940 you can be sure it is now underwired, say electrical engineers .

Low quality materials like corn stover and grain straw should be fortified with nitrogen fertilizer. This additional nitrogen is required in order to prevent soil microorganisms from using available nitrogen in the soil to help decompose such residues high in carbon. This nitrogen later becomes available to plants through the mineralization process.

Increasing the content of or-

ganic matter in a soil is practically impossible. Farmers should concentrate on providing a continuous supply of raw materials to the biochemical factory in the soil. Decomposition of these raw materials provides the compounds which makes soil organic matter the miracle substance that it is.

Recent research has shown that soil organic matter contains some 29 or more different kinds of amino acids, several amino sugars, and nucleic acids which contain nitrogen. The organic phosphorus is largely found in phytin, nucleic acids and phospholipids. The carbohydrate fraction is composed of cellulose and some 18 simple sugars. Some derivatives of lignin have recently been identified in organic matter extracts. Various organic acids and waxes have also been found.

Some of the individual components listed above are thought to be linked together to form complex chain-like polymers. These polymers are being separated from each other and studied in the laboratory using the latest methods.

The polysaccharide fraction of soil organic matter, the glue-like material which cements soil particles together, is being intensively studied. When its chemical structure and method of synthesis in the soil are worked out, treatments can be developed for increasing its production in the soil. Maintaining good soil structure will then be simplified.

Chemists have been intrigued with the chemistry of soil organic matter for many years. The use of newly-developed methods will add much to our knowledge of this miracle substance. Unravelling its chemical structure will make an important contribution to soil science and management.

What Is A Farm?

For the 1954 Census of Agriculture a farm was defined as a "place operated as a unit of 3 or more acres on which the value of farm products totaled $150 or more, as well as each place of less than 3 acres from which the value of agricultural products sold totaled $150 or more."

The 1959 definition was more restrictive. "For 1959, each place operated as a unit of 10 or more acres from which the sale of agricultural products totaled $50 or more, as well as each place operated as unit of less than 10 acres from which the sale of agricultural products totaled $250 or more, was counted as a farm."

—1959 *Census of Agriculture*

Dairying Demands Greater Skills

Competition and heavier money investment require better handling, feeding, breeding, and culling . . .

Condensed from Prairie Farmer

DEVELOPMENTS have been coming fast on the milk production front.

Prominent in the changes have been the decrease in number and increase in size of dairy herds. Indications are that farmers have been quitting milking at the rate of about four percent a year.

Over the last 10 years, the number of farms keeping milk cows probably has declined about a third. Most of those dropping out have been sideline dairymen with one to a few cows. Part of the reduction results from consolidation into larger, more efficient units, but part of it has been due to a shift from dairying to other farm enterprises.

The average number of dairy cows per farm probably has increased one half or more over the 6.9 head shown on the 1954 farm census. However, it is still substantially less than the optimum.

Studies show that unit costs drop appreciably as herds increase up to about 25 cows on one-man farms. Further improvements in production techniques will enable one man to handle still more cows. Because of large investments which some of these improvements require, efficient herd size will be still larger in the future.

Numbers Drop Steadily

The total number of milk cows has been going down persistently. It was 21.6 million head on Jan. 1, 1959, down 6.2 million, or 22 percent, from the peak reached in 1945. The decrease has been mainly in southern Cornbelt and South Central states. Numbers have held up in the Atlantic coast and Far Western states.

Because of increasing yield per cow total milk production continued to increase in spite of fewer cows until about two years

Reprinted by permission from Prairie Farmer, 1230 Washington Boulevard, Chicago 7, Illinois

ago when it began to level off. It declined about six-tenths of one percent in 1958 when high beef prices spurred sales of light milkers to the butcher. It was down about a third of one percent more in the first third of 1959. However, this probably is only a temporary pause in the up-trend.

Production per cow has been rising for a long time and reached 6,330 pounds of milk (240 pounds of butterfat) in 1958, an increase of 1,000 pounds in the last seven years. The rate of gain in yields has been faster recently. More rapid elimination of low producers has resulted from the reduction in cow numbers.

An increased proportion of the cows is in the hands of skillful dairymen who give them better feed and care. Amount of grain and concentrates fed per cow has gone up with increased yields, although the amount fed per 100 pounds of milk has shown only a slight increase. Cows are now fed more and better roughage.

The advantage of artificial insemination in widening the use of the best sires and speeding the breeding up of milking capacity is becoming more evident. The practice has been growing rapidly.

Probably close to a third of all the dairy heifers and heifer calves now on hand are from such matings, so that still larger gains in milking ability from this cause probably are right ahead.

Efforts to improve dairy pastures and meadows by fertilization and seeding with better mixtures were intensified 25 to 30 years ago. To use temporary surpluses, making of grass silage increased. Dairymen have been making greater efforts to produce high quality hay. Early cutting and mow drying practices have come into wider use. Now, pelleting or wafering has started. Equipment that will make a drastic change in hay harvesting, storing and feeding practices probably is not far ahead.

Forage crops have been preserved as silage in the United States for the past 75 years.

Gutter cleaners for stanchion-type barns, milking parlors, bulk tanks and pipe-line milkers are added pieces of dairy barn equipment which have helped make possible increases of 60 to 75 percent in milk production per man-hour as well as made many dairy tasks less disagreeable. Farm electrification helped greatly in bringing about these changes.

Decline In Fat Use

A basic change over the last 20 years has been a decline in per capita use of milk fat, partly be-

cause of increased competition from margarine and possible association of animal fats with arterial disease, and an increase in consumption of solids not fat as their food value became more widely appreciated.

Consumption of milk fat in all forms totalled 26.3 pounds per person in 1958 against an average of 31.7 pounds in 1935-39 while consumption of solids-not-fat increased from 39.6 pounds to 48.4 pounds in the same period. Total consumption of milk solids per person increased in World War II, then settled back for two or three years and has been rather steady at around 74 to 75 pounds for the last 10 years.

Virus diseases produce a wide range of symptoms and types of plant injury.

Of the changes in consumption of different dairy products, the drop in butter usage from an average of 17 pounds per person in 1935-39 to 8.4 pounds last year has been most conspicuous.

Consumption of fluid milk and cream fell to 345 pounds per person last year, a new postwar low, compared with 355 pounds 10 years earlier, but it was above the 1935-39 average of 330 pounds.

Consumption as whole milk alone was about 300 pounds in 1958 against a 1935-39 average of 264 pounds, but consumption of cream was about 7.2 pounds last year against 10.5 pounds 20 years ago — another manifestation of consumers veering away from milk fat.

Consumption Of Cheese

Consumption of cheese increased to 8.5 pounds per person last year against an average of 5.7 in 1935-39; ice cream and other frozen desserts increased from 10.3 pounds to 23.1 pounds and dry whole milk from one-tenth pound to two-tenths of a pound in the same period. However, consumption of evaporated and condensed milk declined from 16.8 pounds to 14.7 pounds.

Consumption per person of many non-fat milk products including cottage cheese, cultured buttermilk, skim milk, chocolate drinks, nonfat dry milk, dry buttermilk and malted milk has increased notably in the last 20 years, but consumption of regular skim milk and buttermilk has declined.

The support program, implemented by purchases of butter, cheese, and nonfat dry milk, probably has kept the amounts of milk and cream going to churns and vats somewhat larger than they otherwise would have been and hastened the shift of sales to creameries from farm-separated cream to whole milk.

Much of the skim milk formerly fed on farms now is bought by CCC as nonfat dry milk.

Production of nonfat dry milk in the last 12 months probably was somewhat above the 1.7 billion pounds turned out in 1957, but about 940 million pounds were bought in the year ending March 31, 1959, under price support or domestic donation programs.

Growth of population as well as changes in per capita consumption has altered the outlets for milk and cream sold by farmers. The following table shows usage of the product sold, in whole milk equivalent, in 1958 compared with 1940 (in billion pounds):

	1958	1940
Fluid use	53.2	29.5
Creamery butter—		
farm-separated	11.0	33.0
whole milk	17.5	3.8
Cheese—		
American	9.6	6.0
Other	3.7	1.7
Evaporated milk	4.9	5.3
Condensed Milk	1.0	.6
Dry whole milk	.7	.2
Frozen dairy products	8.8	3.8
Miscellaneous	2.0	2.1
Total	112.4	86.0

The main increase has been in milk for fluid use, the form that gives producers the highest return. The chief decrease has been in milk used in producing farm-separated cream, producers' lowest-return outlet.

Recent developments in dairy marketing appear to this observer to be less notable than in production. Federal marketing agreements and state controls along with the support program have made all prices more stable and probably made fluid milk price adjustments more orderly than they formerly were.

Sanitary regulations have been tightened at creameries as well as fluid milk plants. Processing plants are fewer but much larger. Milk and cream are transported longer distances from farms to plants.

Cost of distribution, a sore point with dairymen for a long time, keeps going up. The retail cost of a year's dairy product purchases for an average family, as calculated by the U. S. Department of Agriculture, was at an annual rate of $194.36 in the first quarter of 1959 compared with an average of $169.28 in 1947-49. The dairyman's share had decreased from $91.66 to 87.61, while the marketing margin increased from $77.62 to $106.75.

Some people are like steamboats — they toot loudest when they are in a fog.

However, sales of milk through stores in place of home deliveries, larger unit sales and reduction of packaging costs by use of 2-quart cartons and gallon jugs have held down marketing charges for consumers who buy in that way. Just now, chain store

Meat-type hogs are marketed between weights of 180 and 220 pounds.

buying direct from creameries and cheese factories — by-passing middlemen — is a hot issue among the middlemen being bypassed.

Attempts are being made to develop new processing methods that could be quite revolutionary. Of these, concentrated milk, reduced to about one-third its original volume, is furthest along.

There are two kinds—one a fresh concentrate from Grade A milk for sale in cartons under refrigeration, the other a sterile concentrate to be sold in tins and storable for two or more months at room temperature. About 25 firms are reported to be trying to perfect these products.

Studies at the University of Illinois indicate that present methods will produce a fresh concentrate that when reconstituted, cannot be distinguished from regular milk by about half the people who have given it a taste-test. In San Francisco certain stores are reported to be selling a fresh concentrate in substantial volume. Three plants to produce a sterile concentrate are said to be now under construction.

It is calculated that if a fresh concentrate can be made acceptable to consumers, savings in carton and transportation costs would make it possible to produce it in manufacturing milk areas of the Midwest and ship it 1000 miles to consuming centers in the South, East and West Coast and retail it at prices that would reduce milk cost to consumers four to six cents a quart below regular milk. Of course, sanitary regulations would bar sales in many cities and their removal or modification probably would require some long legal battles.

Volume sales of such a product would tend to raise prices to producers in manufacturing milk areas and lower them in fluid markets. In time, the geographic distribution of dairy cows would be less closely tied to fluid markets.

Research efforts are also being directed toward producing a dry whole milk that, when reconstituted, could compete with fresh milk, and toward the use of radiation to sterilize milk and make refrigeration unnecessary. Suc-

cess from these efforts appears to be quite a piece away.

Integration in the form of cooperatives owning processing plants and performing certain assembling, marketing and price-setting functions have long been a prominent feature of the dairy industry. Large factory-type dairy farms owned by milk distributors, where most or all feed is purchased and work done by hired labor, have been in operation for years in California, Florida and some other areas. Heifer raising in some instances is being separated from milk production.

New forms of integration are showing up. The industry is agog now over cow pools, in which farmers turn over their cows to an operator for feeding, milking and care and are paid the difference between the costs and the value of the milk produced.

In the one going example, producers previously selling manufacturing milk have gained the price advantage of selling in a grade A market. Experience has shown that rather high-producing cows are necessary to return a profit to the owner after the high costs are paid.

Be Kind To Cows, And They'll Repay

Do you like peace and quiet? I'll bet you do. So does the milk cow.

Keep the noisy kids, the barking dog, and the hoe handle out of the barn. Noise distraction and "man-handling" the cow can really hurt milk production.

Anything which scares or hurts the cow will cause an increase in the level of adrenalin in the bloodstream. Adrenalin counteracts the effect of another substance which causes milk let-down. Therefore, when a cow is subjected to noises and misuse, she cannot be expected to let-down milk properly. Anything that interferes with normal let-down is going to reduce the amount of milk given and the end result is a smaller milk check. This is the reason for saying: "Treat a cow like a lady."

Do everything to make the cow enjoy milking time and you. Be regular, so she knows when to expect her master and keeper. Be quiet and gentle, and she will return this kindness by producing more milk. —*West Virginia University*

ONE YEAR CONTINUING INDEX

BEEF CATTLE

Care of Calves .....July 1960
Use of Feed Additives .....July 1960
Beef Type Steer Coming .....July 1960
How To Feed Cornbelt Cattle .....Sept. 1960
New Way Grow Beef .....Sept. 1960
Hybrid Vigor, Fact or Fiction .....Sept. 1960
Performance Records, How To Use .Sept. 1960
Modernize Feeding .....Oct. 1960
Planning the Feedlot .....Oct. 1960
Beef Performance Testing .....Nov. 1960
Crooked Calf Disease .....Dec. 1960
Caring for Sick Cow .....Dec. 1960
Guide for Cow Culling .....Dec. 1960
Water Belly, Steer Killer .....Dec. 1960
Will You Breed By Blood Type ....Dec. 1960
How To Handle The "Downer" ....Dec. 1960
Snorter Dwarfs With Us .....Dec. 1960
Why Keep Beef Herd .....Jan. 1961
Pays To Study Cattle Cycles .....Jan. 1961
Cross My Cows With Charollais ....Jan. 1961
Future of Beef .....Jan. 1961
Feeders Getting Enough Protein?....Feb. 1961
Dwarfism In Beef Cattle.....Feb. 1961
Records for Commercial Cattle ...March 1961
Making Beef Cattle Pay .....March 1961
Pelleting Feeds for Cattle .....April 1961

CONSERVATION AND TREE FARMING

Is Water Weakest Link? .....July 1960
Preserve Organic Matter .....Sept. 1960
Good Land Farming .....Nov. 1960
Getting Most From Grassland .....Nov. 1960
Watersheds Show Stuff .....Dec. 1960
Brush Control .....Jan. 1961
Manage Woodlot For Income.....Feb. 1961
Establishing Grass Waterways ....April 1961

CROPS

Oats: Grain or Silage? .....July 1960
When To Irrigate? .....July 1960
Good Plowing is Good Business ...Sept. 1960
Plant Breeding New Directions ....Oct. 1960
Fertilizer Wheat Plot Tests .....Dec. 1960
Farming Without Soil .....Jan. 1961
Nitrogen, Key To Continuous Corn .Jan. 1961
Ways To Boost Soybean Yields .....Jan. 1961
Heard About Single X Corn .....Jan. 1961
Federal Seed Law .....Jan. 1961
I'll Grow Corn, You Feed Pigs .....Jan. 1961
Seed Treating Chemicals.....Feb. 1961
Stretch Your Seed Dollar .....April 1961
What's Ahead for Corn .....April 1961
What About Continuous Corn .....April 1961
Deep Planting Cuts Yields .....April 1961
Strip Processing, Shortcut .....April 1961
Mix Hybrids to Outwit Weather ...April 1961
Which Hybrid Best? .....April 1961
Plant Corn Solid .....April 1961
Preparing for Corn .....April 1961
Report on Dwarf Corn .....April 1961
Corn Production Tips .....April 1961
Rocket To High Yields .....April 1961
Minimum Tillage .....April 1961

DAIRY CATTLE

10 Points for Dairy Profits .....July 1960
Supplemental Feeding .....July 1960
Dairy Industry, Changing World ..Sept. 1960
How Many Cows? .....Sept. 1960
Canned Milk, Future .....Sept. 1960
We Like Dairying Now .....Oct. 1960
Feeding Cows by Electricity .....Oct. 1960
Automation on Dairy Farm .....Oct. 1960
Make Friends, Influence Cows ....Nov. 1960
Conventional vs. Cow Factories ....Nov. 1960
Handle The "Downer" .....Dec. 1960
Caring for Sick Cow .....Dec. 1960
Guide for Cow Culling .....Dec. 1960
Will You Breed By Blood Type ....Dec. 1960
Beat Mastitis Without Medication ..Dec. 1960
Milk Withholding Time .....Jan. 1961
Yardstick for Dairy Mgt. .....Jan. 1961
Cross My Cows With Charollais ....Jan. 1961
How Much Milk Will She Produce ..Jan. 1961
Should I Go Bulk?.....Feb. 1961
Dairymen Work So Hard?.....Feb. 1961
How Much Milk by 1970?.....Feb. 1961
Cost To Produce Milk.....Feb. 1961
Reducing Costs in Dairying.....Feb. 1961
Change Gradually to Pasture ....March 1961
Liquid Meters for Milk .....March 1961
To Earth on Dairy Goals .....March 1961
New Test For Milk .....March 1961
Do Right By Our Cows .....April 1961
Silage in Dairy Ration .....April 1961

FARM BUILDINGS AND EQUIPMENT

Plastic Pipe, How To Use It .....Sept. 1960
Silos Wear Coats, Too .....Sept. 1960
Liquid Manure System .....Sept. 1960
Buildings Earn Way .....Sept. 1960
"If I had the Plans" .....Oct. 1960
Paving A Barnyard .....Oct. 1960
Buy Good Drain Tile .....Nov. 1960
More Asphalt Barnyards .....Jan. 1961
Livestock Equipment Plans .....March 1961
Should You Rent Equipment? ....March 1961
Farm Tools Great Inventions .....March 1961

FARM MANAGEMENT

What's Your Son Going To Do .....July 1960
How Much Pay For Land .....Sept. 1960
Whose Feet in Trough .....Sept. 1960
Handle Livestock With Care .....Sept. 1960
Time Saving Machines Pay .....Oct. 1960
When Profitable to Mechanize .....Oct. 1960
Manure Lagoons .....Oct. 1960
Why Automate? .....Oct. 1960
Principles of Push Button Farming ..Oct. 1960
Human Engineering .....Oct. 1960
Don't Do Hard Way .....Oct. 1960
ABC of Chore Power .....Oct. 1960
These, Too, Are Farm Tools .....Oct. 1960
Farming in 1970 .....Nov. 1960
How You Stack Up On Profits .....Nov. 1960
Farm Operating Budget .....Nov. 1960
Corporation Farming? .....Nov. 1960
Is Promotion The Answer .....Nov. 1960
Carry Enough Insurance? .....Nov. 1960
Cut Costs That Cut Profits .....Nov. 1960
Destroy Farm Surpluses? .....Nov. 1960
Solve Problems in Six Steps .....Dec. 1960
What's Ahead for '61 .....Jan. 1961
Plan Spending, Saving, Borrowing ..Jan. 1961
I'll Grow Corn, You Feed Pigs .....Jan. 1961
Where Stands Today's Farmer.....Feb. 1961
How Farmers Gain Capital.....Feb. 1961
Zoning To Protect Agriculture.....Feb. 1961
Are You A Good Credit Risk?.....Feb. 1961
Barn Lot Economics.....Feb. 1961
High Yields Begin on Paper .....March 1961
Best Way To Make Extra $1000 ..March 1961
Farm Management Tips .....March 1961

ONE YEAR CONTINUING INDEX

FARM EQUIPMENT & MACHINERY

Flail Type Field Chopper .....July 1960
Managing Farm Machinery .....July 1960
Manure Lagoons .....Oct. 1960
Infra-Red: Hot News .....Oct. 1960
Automation Systems .....Oct. 1960
Modern Beef Equipment .....Oct. 1960
Farm Environment Electric Motors ..Oct. 1960
Plan A Water System .....Nov. 1960
LP Gas, How To Handle .....Nov. 1960
Importance of Barn Ventilation ....Dec. 1960
Costs Owning Farm Trucks .....Jan. 1961
Will Machines Control Farm Size....Feb. 1961
Tractor Features Farmers Like.....Feb. 1961
Calibrating Your Sprayer .....April 1961
How To Adjust Corn Planter .....April 1961

FEEDS

Use of Feed Additives .....July 1960
Shall I Go Bulk .....Oct. 1960
Figure Winter Feed Needs .....Nov. 1960
Ditch Old Feeding Ratios .....Nov. 1960
Fowl Manure, Cattle Feed .....Nov. 1960
Future for Medicated Feeds .....Dec. 1960
How To Use Stilbestrol.....Feb. 1961
Palleting Feeds for Cattle .....April 1961
How To Use Moldy Corn .....April 1961
High Moisture Corn for Hogs ....April 1961

FERTILIZERS

Nitrogen, Key To Continuous Corn .Jan. 1961
Fertilize and Profit .....March 1961

HAY AND HAY CROPS

Why Condition Hay .....July 1960
Getting Most From Grassland .....Nov. 1960
Birdsfoot Trefoil Looks Good.....Feb. 1961
Fertilize and Profit .....March 1961
How Effective, Hay Conditioners? March 1961

HOGS

Feeding Hogs .....July 1960
Cool Hogs, More Profits .....July 1960
Roughage For Sows, Gilts .....Sept. 1960
What Do Pigs Inherit .....Sept. 1960
Keep Hogs Cool .....Sept. 1960
Farmer Designed Automation .....Oct. 1960
Take Carry Out of Hog Feeding ....Oct. 1960
Management Adult Boars .....Nov. 1960
Most Profitable Hog System .....Nov. 1960
Planned Parenthood .....Dec. 1960
Hog Cholera .....Dec. 1960
Forward Look Swine Industry .....Jan. 1961
Don't Share Hog Profits .....Jan. 1961
Lean Hogs, Fiber Rations.....Feb. 1961
Performance Testing to Improve Hogs Feb. 1961
Make Extra $5 Per Hog.....Feb. 1961
Shrinkage In Marketing Hogs ....March 1961
Which Hog Ration? .....March 1961
Use Backfat Probing .....March 1961
When Should You Wean Pigs? ....March 1961
Pig Wifery Pays .....April 1961

INSECTS AND INSECTICIDES

Strides In Insecticides .....July 1960
Insects and Man .....March 1961
Why Use Soil Insecticides? .....April 1961

PASTURES

Getting Most From Grassland .....Nov. 1960
High Nitrogen Grass.....Feb. 1961
Road To Greener Pastures .....March 1961

POULTRY

Pests Thrive In Sun .....July 1960
Best Time Start Broilers .....Sept. 1960
What's Ahead for Poultrymen ....Sept. 1960
Feed Automation — Turkeys .....Oct. 1960
Antibiotics for Poultry .....Dec. 1960
Full Performance from Layers .....Jan. 1961

SHEEP AND GOATS

Ewe Management .....July 1960
Change in Lamb Grades .....Sept. 1960
Low Cost Lambing Pens .....Oct. 1960
Care For Lambs .....Nov. 1960
How To Help Ewe In Difficulty ....Dec. 1960
Future for Sheep, Wool .....Jan. 1961
Attention At Lambing Time .....March 1961
Sound Nutrition, Better Wool .....April 1961

SILAGE

Fall Silage Crops .....Sept. 1960
Make More Sense with Silage ....Sept. 1960
All Silage and Automatic .....Oct. 1960
Silage In Dairy Feeding .....April 1961
Test Moisture In Silage .....April 1961

SOILS

Compaction, No. 1 Problem .....July 1960
Soil Molds — Friend or Foe .....Oct. 1960
Good Land Forming .....Nov. 1960
He Saves The Soil .....Dec. 1960
Humus .....Dec. 1960
Farming Without Soil .....Jan. 1961
Better Farm Drainage Needed .....Jan. 1961
Challenging Question About Soil ...Jan. 1961
Feed For Cow & Soil .....March 1961
Don't Rob Your Soil .....March 1961

VETERINARY

Tips For Livestock Health .....July 1960
Cattle Lice — Spray Now .....Nov. 1960
Catarrhal Fever Cause Trouble .....Dec. 1960
Rhinotracheitis Hardest in Winter ..Dec. 1960
Guard Against Rabies .....Dec. 1960
Water Belly, Steer Killer .....Dec. 1960
Beware Livestock Poisons .....Dec. 1960
Animal Diseases You Can Catch ....Dec. 1960
How To Handle The "Downer" ....Dec. 1960
Future for Medicated Feeds .....Dec. 1960
Hog Cholera .....Dec. 1960
Caring for Sick Cow .....Dec. 1960
Crooked Calf Disease .....Dec. 1960
Tranquilizers Helpful Tool .....Dec. 1960
Good Calving Practices.....Feb. 1961
Ways To Check Livestock Losses ..March 1961
Is This Feed Safe, Boss? .....March 1961

WEEDS

Wettable Powder In Weed Sprayers .July 1960
Quackgrass Control .....March 1961

MISCELLANEOUS

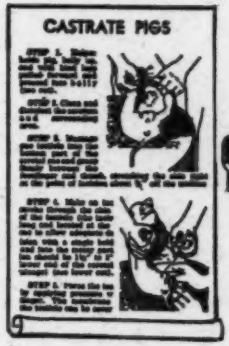
How To Select a Horse .....Sept. 1960
Shep, A Dog Story .....Sept. 1960
How Much Is A Bushel .....Nov. 1960
Love Of Land Built King Ranch ....Nov. 1960
Use Chemicals Safely .....Dec. 1960
Pigeons Fun, Make Meat, Too .....Jan. 1961
They Raise A Smell.....Feb. 1961
Catfish Farming .....April 1961

FARMER'S DIGEST CUTTER-CLEANER-SCRAPER TOOL

Cleans spreader beaters. Scrapes plow and cultivator shovels. Cuts weeds and briars. Open bales. Cutlery steel head has knife-sharp cutting hook, broad scraping edge. 20" long. Hanger, hardwood handle. Order one from Farmer's Digest, Fort Atkinson, for each tractor. $1.69 each. Two for $3.00.

FARMER'S DIGEST PIG & CALF CASTRATING KIT

With New Castra-Knife, Illustrated Instructions, Lanyard, Extra Blades.



Do your own castrating and do it right. Half a litter or one calf pays for this kit. The new Castra-Knife is a sharp, handy, safe razor-blade cutter. Unlike old type castrators, it is always super sharp for a fast, sanitary, humane job. It is safer for you and the animal because blade sets to limit depth of cut, also retracts and is shielded when not in use.

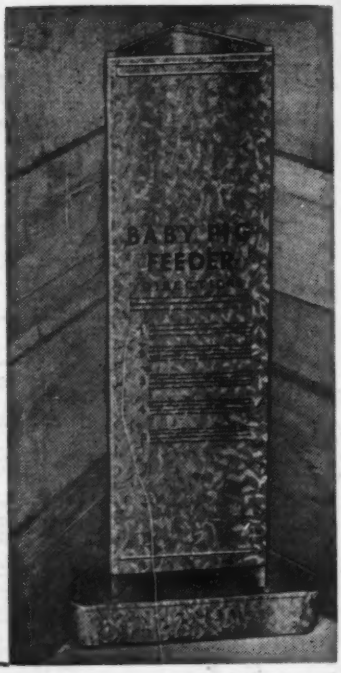
Authorities say illustrated instructions are best ever prepared covering old scrotal sac operation and new college-approved, simplified ventral incision method. Plastic lanyard cord with swivel suspends knife from clothing to free hands between operations. Saves time and avoids contamination. Kit also includes five extra blades and a plastic case. Order from this ad. Send only $1.29 to Farmer's Digest. Postpaid. Money back guarantee.

ORDER FROM — FARMER'S DIGEST, Fort Atkinson, Wis.

NEW FARMER'S DIGEST BABY PIG LITTER FEEDER

Start pigs on new creep feeds as early as possible to make money with hogs. This new feeder fits in corner of the pig creep near the heat lamp to start pigs eating as young as five days. Helps you get fast, low cost gains. Feeder front panel adjusts to allow a little or a lot of feed in pan. Saves feed, avoids waste. When litters run together four single feeders make one large feeder. Complete instructions.

4 FEEDERS only $9.85 Postpaid



FARMER'S DIGEST FARM AND HOME FILES

8 Files, Only $2.95 Postpaid

Now, keep your farm business records filed neat and handy, right at your finger tips. Avoid losing expense records that save tax money. Keep machinery instruction books, crop and livestock records, etc. Made of white-lined cardboard covered with leather-like, forest green paper. Shipped folded flat. Look fine on your office or home bookshelves. Available with printed labels at right. Size 2" thick by 10" high by 7" deep. Specify files desired by number. Send check to address below.

FILES AVAILABLE
(Order by number)

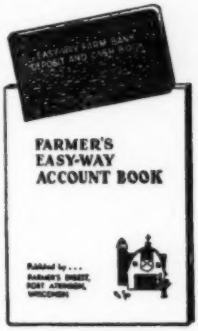
1. Contents: (You fill in)
2. Agricultural Bulletins
3. Machinery Manuals
4. Swine Records
5. Crop and Field Records
6. Paid Bills and Receipts
7. Unpaid Bills, Receipts
8. Livestock Records
9. Cow Production Records
10. Farmer's Digest
11. Reader's Digest
12. National Geographic
13. Breeding Records
14. Soil Records
15. Poultry Records
16. Social Security Records
17. 4-H Records
18. F. F. A. Records
19. Veterinary Information
20. Government Programs
21. Cancelled Checks
22. Kitchen File
23. Comic Books

Especially for Farmer's Digest —

Special file holds one year of Farmer's Digest. Makes a 1000-page, completely indexed library of a one year subscription. Has advantages over binding that costs $4.00 per year. Order with other files listed at right or send 50c for one file, $1 for three.

ORDER FROM — FARMER'S DIGEST, Fort Atkinson, Wis.

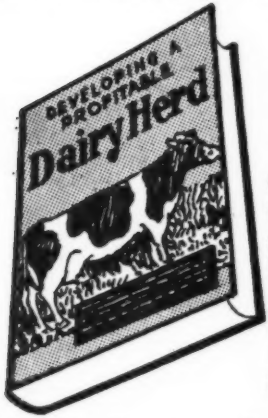
Farmer's Digest Farm Account System Lets Your Bank Keep Your Books



Saves time and taxes. Here's how it works: You deposit all farm income, using the handsome, cloth-bound Easy Way Deposit Book instead of your old bank book. Opposite the teller's entries, you jot down where money came from in ample space provided. To record expenses, pay everything possible by check and note cash spent in handy forms provided. Thus, at end of year, you have accurate substantiated records to summarize in the 48-page Easy-Way Account Book. Regular $1.95. Special Price $1.00.

New Corn Grower's Check Tape

This new idea helps you use latest approved practices to grow more corn. Does four jobs in a jiffy: (1) checks planter drop to make sure you plant enough seed, (2) counts stand per acre when corn comes up, (3) estimates yields before picking, (4) tells bushels your picker left in field. To read tape, just lay along row and count seed, plants or ears. For seed count, operate planter on hard lane. 108". Only $1.29 postpaid.



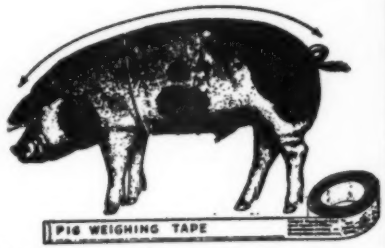
Book: "Developing A Profitable Dairy Herd"

Book tells whole story of how experts at Carnation Milk Farms built a record-breaking herd . . . revealing secrets every dairyman can use. Covers everything — buildings, breeding, diseases, feeds, feeding, management veterinary treatment. Brings practical help to overcome dairy problems. Well illustrated. Cloth. 224 pages. Regular price $3.50. Special price $1.75 postpaid.

Order From — Farmer's Digest, Fort Atkinson, Wis.

Management Tool
for Swine Growers —

NEW HOG WEIGHING TAPE



Use this tape to check weights frequently and make more money from hogs. Select best doers for breeding. Get best gains from feeders. Sell at weights to top the market. Accurately estimates weight by using both length and heartgirth measurements. 60" long, heavy cloth. Money back guarantee. Each $1.59, 3 for $4.49, 12 for $16.95. Write: Farmer's Digest, Fort Atkinson, Wisconsin.

New Easy
Way to —

"WEIGH"

Beef Cattle

New, low cost tape makes it easy to accurately estimate the weight of your cattle. Tested at an experiment station, scale and tape weights differed less than 2% on total weight of 38 head. Use it to keep track of daily gain. Use it also to "weigh" fed cattle and market for the most profit. For cattle from 82 to 1888 pounds. One side estimates weight of fed cattle. Other side for feeder, beef breeding and crossbred cattle. To use, just place around heart girth, pull tight, and read correct scale. 108" long, strong, plastic coated fabric in double thickness. Money back guarantee. Each $1.59, 3 for $4.49, 12 for $16.95.

ORDER FROM — FARMER'S DIGEST, Fort Atkinson, Wis.